THE UNIVERSITY *of* EDINBURGH

Open space on the edge of the city:

Exploring how people's perceptions and usage can inform management of peri-urban open spaces, focusing on case studies of Ljubljana and Edinburgh

Vita Žlender

Doctor of Philosophy
The University of Edinburgh
2013

Declaration

I hereby declare that I am the sole author of this thesis; that the following thesis is entirely my own work; and that no part of this thesis has been submitted for another degree or qualification.

Vita Žlender
April 2014

This thesis was funded by:

Javni sklad Republike Slovenije za razvoj kadrov in štipendiranje

Abstract

This thesis studies peri-urban landscapes (the landscape between the rural and urban setting), which has until recently gained little attention in academia and even less in planning practice and policy. This is largely due to a general view of these landscapes as something transient that will be developed in the future. However, some research has recognised these landscapes as important for the leisure and recreation of urban and suburban dwellers. Thus, this thesis is concerned with the current state of the peri-urban landscape, its characteristics and drivers of change with a focus on accessibility. Accordingly, the interest of the study lies in exploring people's landscape perceptions and uses in relation to the accessibility of peri-urban areas and how they change over time.

The focus of this thesis is Ljubljana and Edinburgh; these two cities have been selected as the case studies in order to elucidate the spatial and social patterns of the space on the edge of the city. The thesis centres on the perspective of inner-city dwellers' perceptions, use of, and accessibility to peri-urban green spaces.

Guided by the sense of place theory and the landscape planning approach, empirical work is at the heart of this research. A mixed-method approach, comprising questionnaire and focus groups with inner-city dwellers, interviews with authorities and planners and GIS-based analysis, is applied to gain new knowledge of inner-city dwellers' relationship with peri-urban green spaces.

The research found that people greatly value the established peri-urban green spaces, which have a variety of meanings for them, varying according to people's socio-demographic and cultural characteristics. Furthermore, the appreciation of extensive semi-natural green spaces and green corridors has been shown to be universal and may imply some clues for further spatial planning of these areas. Conversely, people in general did not use the areas with low intrinsic value that are perceived as messy, ambiguous, etc. It appears that these spaces have lost their sense of place and therefore they are under threat of further development. Their future should thus be considered within long-term planning goals, in order to ensure environmentally sustainable and socially inclusive development.

To my parents.

Mojim staršem.

Acknowledgements

This thesis is a piece of work that represents several years of my life during which I have grown personally and professionally. This, however, would not be possible without the support of many individuals and associations.

I am most grateful to my supervisors, Professor Catharine Ward Thompson and Professor Angela Hull, for their professional guidance, support at all times, inspiring criticisms and helpful suggestions through the whole process of obtaining my PhD degree. I am also thankful to Professor Peter Aspinall for his assistance with statistical analyses and for the valuable ideas and advices. I would like to thank to Anne Boyle, too, for her English language support.

I would like to acknowledge the Sklad RS za razvoj kadrov in štipendiranje for providing the funding for my research. Without their support my research would not have been possible. Furthermore, I would like to express my sincere gratitude to all associations and individuals who were involved in my fieldwork of conducting focus groups and the questionnaire, especially Sabina Fridl (DCA), Mateja Zabukovec (IAT), Nina Berovič (Okoljski center) and Irene Taylor (Tollcross Community Centre), and to all interviewees who gave of their time generously.

I would like to sincerely thank to all my friends and colleagues who I got to know in Edinburgh and with whom I shared grey and blue Edinburgh skies, academic discussions and positive energy, in particular: Suzanne, Andy, Bahareh, Edwar, Larissa, Esra, Eva, Linda, Che and Omar and all others who made life enjoyable in rainy Edinburgh days. Sincere thanks also to my old friends, who could not be with me at all times, but were always in my thoughts and in my heart. A big thank-you to Stefano whose support and love have made my years of research so much easier. Finally, I would like to express gratitude to my aunt, my grandma and foremost to my parents who have been (as always) of invaluable help with their support and understanding.

Table of contents

DECLARATION ..... **I**

ABSTRACT ..... **III**

ACKNOWLEDGEMENTS ..... **V**

TABLE OF CONTENTS ..... **VI**

LIST OF FIGURES ..... **XII**

LIST OF TABLES ..... **XVII**

CHAPTER 1: INTRODUCTION **1**

1.1 PROLOGUE 1

1.2 THE PROBLEM DEFINITION 3

1.2.1 The characteristics of and, attitude to, peri-urban open spaces *4*

1.2.2 Leisure accessibility to peri-urban green open spaces *7*

1.3 RESEARCH QUESTIONS 8

1.4 RESEARCH STRATEGY 8

1.5 AIMS AND OBJECTIVES 10

1.6 THESIS STRUCTURE 11

CHAPTER 2: CASE STUDY CITIES **13**

2.1 THE CRITERIA FOR SELECTION OF THE CASE STUDY CITIES 14

2.1.1 Medium-sized cities in a pan-European frame *15*

2.1.2 Typology of rural-urban regions *18*

2.1.2.1 A review of the European rural-urban typologies on a regional and metropolitan level 18

2.1.2.2 PLUREL typology of rural-urban regions (RURs) 20

2.2 DESCRIPTION OF THE CASE STUDY AREAS 26

2.2.1 Case study of Ljubljana *27*

2.2.1.1 Historical city development 27

2.2.1.2 Land use change from the 1990s until the present day 31

2.2.1.3 Infrastructure and transportation network development 34

2.2.1.4 Urban planning in Ljubljana from the 1990s until present 37

2.2.1.5 The peri-urban landscape in Ljubljana 39

2.2.1.6 The legal position regarding access in Slovenia 41

2.2.2 Case study of Edinburgh *42*

2.2.2.1 Historical city development 42

2.2.2.2 Contemporary city development and redevelopment of Edinburgh 47

2.2.2.3 Infrastructure and development of a transportation network 51

2.2.2.4 Urban planning and the governance system in Edinburgh 55
2.2.2.5 The peri-urban landscape in Edinburgh 58
2.2.2.6 The legal position with regard to access in Scotland 59
2.3 COMPARISON OF BOTH CASE STUDY CITIES 60
2.3.1 Similarities of both case study cities 61
2.3.2 Differences between the case study cities 61
2.3.2.1 Urban structure 61
2.3.2.2 Cities' growth strategies and implementation 62
2.3.2.3 Cities' respective travel characteristics and transport infrastructure development 63
2.3.2.4 Access to land 65
2.4 KEY CONCLUSIONS 66
CHAPTER 3: FRAMEWORK AND AREA OF THESIS 67
3.1 PERI-URBAN LANDSCAPE AS THE INTERFACE BETWEEN URBAN AND RURAL SETTING 68
3.1.1 Definition and critical evaluation: peri-urban, semi-urban, urban fringe and urban sprawl 69
3.1.2 Defining the character of the peri-urban landscape 73
3.1.3 Peri-urban land use types 79
3.1.4 Drivers of change to peri-urban land use 80
3.2 TRANSPORTATION NETWORK AND ACCESSIBILITY OF THE PERI-URBAN LANDSCAPE. 83
3.2.1 Towards sustainable urban form 83
3.2.2 Present approaches to (transportation) sustainability and sustainable urban form 85
3.2.3 Spatial policies and development control/active management strategies 87
3.2.4 Transport – mobility – accessibility 94
3.2.5 Accessibility and sustainable planning 97
3.2.6 Importance of the accessibility and the extensiveness of peri-urban open spaces for their use 100
3.3 PEOPLE'S PERCEPTIONS AND USE OF THE PERI-URBAN LANDSCAPE 104
3.4 THEORETICAL FRAMEWORK 107
3.4.1 Social patterns – Sense of place approach 107
3.4.1.1 Place theories 108
3.4.1.2 A sense of place approach and components 111
3.4.2. Spatial patterns – Landscape planning approach 114
3.5 CONCLUDING REMARKS 116
CHAPTER 4: RESEARCH METHODOLOGY 119
4.1 RESEARCH PROCEDURE 121

4.2 METHODS OF RESEARCH 123
4.2.1 Grounded theory *124*
4.2.2 Case study *125*
4.3 METHODS OF DATA COLLECTION 127
4.3.1 Social part *127*
4.3.1.1 Questionnaires 130
4.3.1.2 Focus groups 131
4.3.1.3 Semi-structured interviews 132
4.3.2 Spatial part *133*
4.3.2.1 Delineation of peri-urban landscape: Overlay method 134
4.3.2.2 Accessibility of peri-urban landscape: Structural Accessibility Layer 135
4.4 SAMPLE ANALYSIS METHODS 142
4.4.1 Statistical analyses *142*
I. Descriptive analyses 142
II. A Chi-square Test, Mann-Whitney U Test and Kruskal-Wallis Test 143
III. Factor analysis and Binary regression 143
IV. Open coding 144
4.4.2 Spatial analysis *145*
4.5 ROBUSTNESS OF DATA COLLECTION AND ANALYSIS – TRIANGULATION 146
3.6 KEY CONCLUSIONS 151
CHAPTER 5: DATA COLLECTION 153
5.1 APPLICATION OF THE METHODS 154
5.1.1 Peri-urban land use components *154*
5.1.2 Questionnaire application *156*
5.1.2.1 Questionnaire design 156
5.1.2.2 Questionnaire administration 159
5.1.2.3 Questionnaire analysis 162
5.1.3 The focus groups' implementation *162*
5.1.3.1 The design of the focus groups 162
5.1.3.2 Conducting the focus groups 164
5.1.3.3 Analysing the focus groups 165
5.1.4 Interviews with authorities and planners *165*
5.1.4.1 Preparation for the interviews 165
5.1.4.2 Conducting the interviews 166
5.1.5 Landscape characterisation of the peri-urban areas in both cities *167*
5.1.6 Structural Accessibility Layer *170*
5.2 KEY CONCLUSIONS 177
CHAPTER 6: ANALYSIS AND RESULTS OF THE QUESTIONNAIRE 180

6.1. DESCRIPTIVE DATA ANALYSIS 181
6.1.1 Representativeness of the sample 181
I. Gender: 181
II. Age: 182
III. Education: 183
IV. Current occupation: 184
V. Respondents' living conditions: 185
6.1.2 The use of green spaces for leisure and recreational activities 187
I. General use of green spaces: 187
II. The use of peri-urban green spaces: 190
6.1.3 The travel characteristics cited by respondents when getting to peri-urban green spaces 201
I. Owning a car, a driving licence, a bus ticket and a bicycle: 201
II. Cycling preferences and characteristics: 202
III. Preferences and characteristics in travelling to (peri-urban) green spaces: 203
IV. Management with regard to facilities of (peri-urban) green spaces: 207
6.2 PREDICTORS OF ACCESSIBILITY 207
6.2.1 Matters relating to accessibility to green open spaces 208
5.2.2 Respondents' perceptions and attitudes to peri-urban green space 212
6.2.3 Logistic regression analysis 213
6.3 RESPONDENTS' PERCEPTIONS OF, AND PREFERENCES FOR, THE PERI-URBAN GREEN SPACE THEY VISITED MOST OFTEN 215
6.4 KEY CONCLUSIONS 221
CHAPTER 7: ANALYSIS AND RESULTS OF THE FOCUS GROUPS AND INTERVIEWS 223
7.1 FOCUS GROUPS 223
7.1.1 Characterisation of peri-urban areas 225
7.1.2 Use of, and preference for, peri-urban green spaces 227
7.1.2.1 The green spaces that the participants chose to go to, for their activities 227
7.1.2.2 The reasons for participants' choice of green space 228
I. The type of activities in which people engaged 231
II. Landscape preferences 234
III. (Peri-)urban green space-type preferences 237
IV. Social contact 240
7.1.2.3 Satisfaction with the management of peri-urban green spaces 242
7.1.2.4 Constraints that prevent people visiting peri-urban space 247
7.1.3 Accessibility of peri-urban green spaces 249
7.1.3.1 Modal choices – habits and attitudes 250

7.1.3.2 Existing transport infrastructure – respondents' opinions of its connectivity, continuity and safety 254
7.1.3.3 Hypothetically, what would change respondents' minds to use a different travel mode? 259
7.1.4 Key conclusions 261
7.2 INTERVIEWS 263
7.2.1 The notion of peri-urban area 263
I. Ljubljana 264
II. Edinburgh 268
7.2.2 The use of peri-urban green spaces 271
I. Ljubljana 271
II. Edinburgh 273
7.2.3 Accessibility to peri-urban green spaces 276
I. Ljubljana 276
II. Edinburgh 278
7.2.4 Key conclusions 279
CHAPTER 8: SPATIAL DATA ANALYSIS AND RESULTS 281
8.1 OVERLAY ANALYSIS 281
Ljubljana 285
Edinburgh 289
8.2 STRUCTURAL ACCESSIBILITY LAYER (SAL) 293
8.2.1 Diversity of activities by the four transport modes 294
Ljubljana 294
Edinburgh 301
CHAPTER 9: DISCUSSION AND CONCLUSION 310
9.1 DISCUSSION 310
9.1.1 Question One: What type of peri-urban landscape are inner-city dwellers attracted to for their leisure activities? 310
9.1.1.1 Activities in which inner-city dwellers engaged 311
9.1.1.2 Types of places the people visited and the reasons for their choices 312
9.1.1.3 Frequency of visits 315
9.1.1.4 Constraints on the use of peri-urban green spaces 318
9.1.2 Question Two: What are people's preferences with regard to the peri-urban landscape? 321
9.1.2.1 Perceptions of peri-urban areas 321
9.1.2.2 Attitudes to peri-urban green areas 324
9.1.2.3 Social contact 326
9.1.2.4 Space management 327
9.1.3 Question Three: What site features are people attracted to? 328

9.1.4 Question Four: How do perceptions of access by means of transport affect usage? ... *329*
9.1.4.1 Distance and ease of access ... 331
9.1.4.2 Means of transport ... 333
9.1.4.3 Attributes of green space ... 337
9.1.5 Question Five: How do current spatial planning and transportation policies match with inner-city dwellers' wishes and preferences for peri-urban landscape use? How do the policies enable or create barriers to the accessibility of the peri-urban landscape? ... *339*
9.1.5.1 Ljubljana ... 339
9.1.5.2 Edinburgh ... 344
9.1.5.3 Inclusive planning ... 348
9.2 CONCLUSION ... 349
9.2.1 How can the knowledge of inner-city dwellers' perceptions and uses of peri-urban green spaces contribute to more effective management strategies for this space? ... *349*
9.2.2 Evaluation of the research methodology ... *352*
9.2.3 Planning and policy implications ... *353*
9.2.3.1 Accessibility ... 354
9.2.3.2 Inclusive planning ... 355
9.2.3.3 The management of peri-urban areas ... 358
9.2.4 Setting the research into a wider perspective ... *360*
9.2.5 Limitations of the study ... *361*
9.2.6 Further concerns ... *363*

REFERENCES ... 364

APPENDICES……..……...VOLUME II

APPENDIX A – PILOT STUDY
APPENDIX B – INITIAL RESEARCH STRATEGY
APPENDIX C – QUESTIONNAIRE SAMPLES
APPENDIX D – FOCUS GROUP GUIDE
APPENDIX E – INTERVIEWS GUIDE
APPENDIX F – STRUCTURAL ACCESSIBILITY LAYER
APPENDIX G – STATISTICAL ANALYSES

List of Figures

Figure 1.1: Diagram representing the thesis structure (Source: Author's own). 11
Figure 2.1: European urban population by size class of city region, 2000 (Giffinger et al., 2007b, illus., Figure 1). 15
Figure 2.2: Change of peri-urban artificial surface share 2000-2025 (The maps show the projected change of the share in artificial surface in peri-urban areas relative to the total artificial surface in percentage points. In the majority of regions, the share of artificial surface in peri-urban areas would increase.) (Ravetz et al., 2013, p.40, illus., Fig.2.9). 17
Figure 2.3: RUR delineation and morphology classification for EU (Zasada et al., 2013, p.58, illus., Fig.3.2). 22
Figure 2.4: Simplified RUR sub-region delineation into urban-, peri-urban and rural sub-regions (Loibl et al., 2010, p.9, illus., Fig. 2). 23
Figure 2.5: Final result of the sub-regional delineation covering the Ljubljana case study area (Source: Author's own extraction from Loibl et al. (2010)). 25
Figure 2.6: Final result of the sub-regional delineation covering the Edinburgh case study area (Source: Author's own extraction from Loibl et al. (2010)). 26
Figure 2.7: Represented characteristics of the city of Ljubljana and (urban) regions (Pichler-Milanović, 2002, illus., Table 2). 30
Figure 2.8: Represented changes in the numbers of inhabitants according to settlement types between 1961-2000 in the (functional) urban region (FUR) of Ljubljana (Pichler-Milanović, 2003a, illus., Table 13). 30
Figure 2.9: Development of the urban structure of Ljubljana (Urban development of Ljubljana, City Museum of Ljubljana, 1997, in Pichler-Milanović, 2003a). 32
Figure 2.10: In Ljubljana, four major shopping centres were built at the edge of the inner-city near the intersections of the ring road (Source: Author's own, adapted from Pichler-Milanović, 2003a): 33
Figure 2.11: Land use changes between different land use patterns in the urban region of Ljubljana (LUR) 1997-2001 (Pichler-Milanović, 2005, illus., Table 2.2). 34
Figure 2.12: The light grey colour indicates new larger housing areas, as planned in the new Municipal Spatial Plan (OPN) of Ljubljana (MOL, 2010, p.11398, illus., Slika 7). 34
Figure 2.13: Indication of major development forces in Ljubljana: roads, morphology (two hills) and railway (Source: Author's own). 35
Figure 2.14: The spatial development of Ljubljana, according to the new Municipal Spatial Plan (OPN) (MOL, 2010, p.11387, illus., Slika 2 & Slika 3). 35
Figure 2.15: Residential mobility of the population between 1982-1998 according to types of settlement in FUR of Ljubljana (Pichler-Milanović, 2003a, illus., Table 13). 36
Figure 2.16: The concept of the green open space network (MOL, 2010, p.11399; illus., Slika 8). 40

Figure 2.17: The distribution of residential areas in Edinburgh in 1984 (Knox, 1984, p.331, illus., Fig.2). 48
Figure 2.18: Components of strategic planning in Edinburgh in 1984 (Knox, 1984, p.332, illus., Fig.3). 49
Figure 2.19: Corridor map as proposed in the new Edinburgh Local Development Plan: the city centre is easily accessible by radial transport routes, both road and rail (CEC, 2013b, p.15, illus., Figure 2). 51
Figure 2.20: Location of development relative to frequent bus services and Edinburgh's town centres (McKirdy et al., 2008d, p.4, illus., Table 1). 52
Figure 2.21: Population distribution by distance band from Edinburgh city centre (% of the total Edinburgh population) (McKirdy et al., 2008d, p.3, illus., Graph 1). 52
Figure 2.22: Housing completions by former land use (McKirdy et al., 2008a, p.8, illus., Graph 6). . 56
Figure 2.23: LDP spatial strategy summary map (CEC, 2013a, p.6, illus., Figure 1). 57
Figure 2.24: Similarities of Ljubljana and Edinburgh (Source: various sources). 61
Figure 2.25: Urban structure of Ljubljana and Edinburgh (Source: Author's own). 62
Figure 3.1: Conceptual diagram of peri-urban areas, as used in the PLUREL project (Piorr et al., 2011, p.25, illus., Figure 2). 72
Figure 3.2: Comparative diagram of the land use change drivers and consequences, between the cities and the countryside (Source: Author'S own, adapted after Ravetz et al. (2008)). 80
Figure 3.3: Driving forces and dynamics of peri-urbanisation, as indicated in PLUREL project (Piorr et al., 2011, p.32, illus., Figure 7). 81
Figure 3.4: Basic spatial concepts for landscape planning (Ahern, 2005, p.123, illus. Figure 2). 92
Figure 3.5: Punter's (1991) urban design theory on how urban design actions can enhance sense of place (Carmona et al., 2003, p.99, illus., Figure 5.7). 109
Figure 3.6: Topophilia, Technophilia, Technophobia: three attitudes toward technology and landscape (Thayer, 2002, p.106, illus., Figure 9). 110
Figure 3.7: Conceptual basis of this thesis. Source: Adopted from Canter (1977) and Punter (1991). 116
Figure 4.1: The research inquiry in relation to the research methodology (Source: Author's own)... 119
Figure 4.2: Diagram representing the research approach structure (Source: Author's own). 120
Figure 4.3: Diagram representing the research methodology and procedure (Source: Author's own). 122
Figure 4.4: Case Study Method: The two cases are analysed through the replication approach (Yin, 2009, p.57, illus., Figure 2.5). 127
Figure 4.5: Factors influencing travel behaviour (Source: Author's own). 136
Figure 4.6: Representation of the conceptual choices made in the development of the SAL (Silva, 2008, p.80, illus., Figure 4.4). 137
Figure 4.7: Accessibility boundaries by transport mode drawn for two example origin points (Silva, 2008, p.78, illus., Figure 4.3). 139

Figure 4.8: The accessibility clusters for the three modes of transport (Silva, 2008, p.5, illus.). 141
Figure 4.9: Research sub-question One. 148
Figure 4.10: Research sub-question Two. 149
Figure 4.11: Research sub-question Three. 149
Figure 4.12: Research sub-question Four. 150
Figure 4.13: Research sub-question Five. 151
Figure 5.1: The four-step procedure for delineation of the peri-urban landscape. 167
Figure 5.2: Case-specific choices for the accessibility measure (Silva, 2008, p.80, illus., Figure 4.5). 171
Figure 5.3: Area boundaries for SAL examination, questionnaire distribution and the residence of focus group participants, for Ljubljana. 172
Figure 5.4: Area boundaries for SAL examination, questionnaire distribution and the residence of focus group participants, for Edinburgh. 172
Figure 6.1: Questionnaire analysis: respondents' gender, for both case study cities. 182
Figure 6.2: Age groups of the respondents, for both case study cities. 182
Figure 6.3: Education of respondents, for both case study cities. 184
Figure 6.4: Current occupation of respondents, by the case study city. 185
Figure 6.5: Type of housing that respondents lived in, by the case study city 186
Figure 6.6: Length of time living in the current residence for the three age groups, by the case study city. 186
Figure 6.7: The availability of a second house/temporary accommodation in a rural area, and the frequency of second house usage (if they had one available), by the case study city. 187
Figure 6.8: The grouping of selected green space types under urban, peri-urban and rural green spaces (Source: Author's own). 188
Figure 6.9: Frequency of visiting green space types, by the case study city 189
Figure 6.10: The most often visited peri-urban green space type, by the case study city. 191
Figure 6.11: The most often visited peri-urban green spaces in Ljubljana. 192
Figure 6.12: The green spaces in Edinburgh that are visited the most often. 194
Figure 6.13: Visits made to peri-urban green open spaces with other people or alone, by the two case studies. 199
Figure 6.14: Respondents' travel time and the time of day when they went to the peri-urban green space they visited most often, for each case study city. 205
Figure 6.15: Respondents' ratings of the statement: 'I care about the future of this place', for both case study cities, by the three age groups. In Ljubljana, the sampling adequacy of this statement was not sufficient and thus this statement was not included in the analysis. 216
Figure 6.16: Respondents' ratings of the statement: 'I am not moving away from this part of Ljubljana/Edinburgh in the near future', for both case study cities, by the three age groups. 219
Figure 6.17: Respondents' ratings of the statement: 'This place and its surroundings are good just the way they are', for both case study cities, by the three age groups. 220

Figure 6.18: Respondents' ratings of the statement: 'There aren't any features of this place that annoy me', for both case study cities, by the three age groups. 220
Figure 6.19: Respondents' ratings of the statement: 'I feel as if I'm able to move freely in this place', for both case study cities, by the three age groups. 221
Figure 7.1: The graphical representation of the places which were mentioned by the focus group participants as being peri-urban, in Ljubljana (left) and Edinburgh (right). 226
Figure 7.2: The interviewees' delineation of peri-urban area in Ljubljana. 264
Figure 7.3: The area of Ljubljana's Urban development plan (in orange) within the Ljubljana municipality (MOL, 2010, p.11394, illus., Slika 6). 265
Figure 7.4: The interviewees' delineation of urban fringe areas in Ljubljana. 267
Figure 7.5: The interviewees' delineation of peri-urban areas in Edinburgh. 269
Figure 7.6: The area of the Rural West Edinburgh Local Plan (RWELP) within the City of Edinburgh area (CEC, 2011c). 269
Figure 7.7: The interviewees' delineation of urban fringe areas in Edinburgh. 270
Figure 7.8: The interviewees' indication of the most used urban and peri-urban green spaces in Ljubljana. 273
Figure 7.9: The interviewees' indication of the most used urban and peri-urban green spaces in Edinburgh. 275
Figure 8.1: The graphical representation of combining data in the peri-urban area delineation, in Ljubljana. 282
Figure 8.2: The graphical representation of combining data in the peri-urban area delineation, in Edinburgh. 283
Figure 8.3: AIA (left) and ARSA (right) areas of Ljubljana and its surroundings. 286
Figure 8.4: WBS (left) and HP (right) areas of Ljubljana and its surroundings. 286
Figure 8.5: Ljubljana: Settlements with densities 100-149 inh./km^2 (red) and 150-500 inh./km^2 (black) (left), and formal designation of the peri-urban area as stated in the new development plan (right). 287
Figure 8.6: Peri-urban area of Ljubljana: An outcome of the delineation process in this thesis. 288
Figure 8.7: An excerpt from an ELSP diagram: Number 4 indicates Edinburgh's urban fringe area, earmarked for 400 houses (CEC et al., 2000). 290
Figure 8.8: AIA (left) and ARSA (right) areas of Edinburgh and its surroundings. 290
Figure 8.9: WBS (left) and HP (right) areas of Edinburgh and its surroundings. 291
Figure 8.10: Edinburgh: Settlements with densities 100-149 inh./km^2 (red) and 150-500 inh./km^2 (black) on the left side and formal designation of the RWELP area on the right. 291
Figure 8.11: Peri-urban areas of Edinburgh: An outcome of the delineation process in this thesis. 292
Figure 8.12: Ljubljana – Diversity of activities accessible by walking (NMw). 295
Figure 8.13: Ljubljana – Diversity of activities accessible by cycling (NMc). 296
Figure 8.14: Ljubljana – Diversity of activities accessible by public transport (PT). 298
Figure 8.15: Ljubljana – Diversity of activities accessible by car (CAR). 299
Figure 8.16: Ljubljana – Accessibility clusters. 301

Figure 8.17: Edinburgh – Diversity of activities accessible by walking (NMw). 303
Figure 8.18: Edinburgh – Diversity of activities accessible by cycling (NMc). 304
Figure 8.19: Edinburgh – Diversity of activities accessible by buses (PT), with no cut-off value. 305
Figure 8.20: Edinburgh – Diversity of activities accessible by buses (PT) where the cut-off value is considered. 306
Figure 8.21: Edinburgh – Diversity of activities accessible by car (CAR). 306
Figure 8.22: Edinburgh – Accessibility clusters (when considering accessibility by bus with the cut-off value). 308
Figure 8.23: Edinburgh – Accessibility clusters (when not considering the cut-off value in calculation of bus accessibility). 309
Figure 9.1: The peri-urban green spaces visited most frequently, according to the questionnaire results (left), and the interviewees' indication of the most visited urban and peri-urban green spaces (right), in Ljubljana. 316
Figure 9.2: The accessibility-related factors which do or do not influence the use of peri-urban green space, on the basis of the joint research methods' findings. 330

List of Tables

Table 2.1: Growth of artificial surface in urban, peri-urban and rural areas, 2000-2025, EU27[a] (Ravetz et al., 2013, p.35). 16
Table 2.2: Conceptual peri-urban typologies in Europe (adapted after Korcelli, 2008). 20
Table 2.3: RUR typology characteristics for the two cities selected in this research as the case studies (for a detailed overview, see Loibl et al. (2010)). 24
Table 2.4: Comparison of Slovenia and Scotland's relevant regulations (adapted after Bauer et al. (2004)). 65
Table 3.1: Main advantages and disadvantages of accessibility measures (Silva, 2008, p.57, Table 3.1). 97
Table 3.2: A summary of various research findings on the green space attributes in relation to cut-off values of travelling to the site by different means of transport (Source: Author's own). 102
Table 4.1: Statistical tests used on variable combinations (Adopted from:, Introduction to SAS, 2013) 144
Table 5.1: The typology of public green space is adopted from PPG17 (DCLG, 2002), Urban Green Spaces Taskforce (DTLR, 2002) and Green and Public Space Research (Bell et al., 2006). 155
Table 5.2: The questionnaire distribution area in both cities. 160
Table 5.3: Demographic profile of focus group participants. 165
Table 5.4: Data sets used in the overlaying process. 169
Table 5.5: Additional information relevant to the delineation of peri-urban landscape. 170
Table 5.6: Activity types considered (Source: Author's own on the basis of questionnaire results (Question One)). 174
Table 5.7: Cut-off criteria for all modes of transport for both case-study cities (Source: Author's own on the basis of questionnaire results (Question Two)). 175
Table 5.8: Values considered in the calculation of the accessibility index. 175
Table 5.9: Cut-off values for travelling with a specific transport means, by the case study city 176
Table 6.1: The age groups of respondents in relation to census statistics for both cities. 183
Table 6.2: The categorisation of peri-urban green spaces, which were listed in the questionnaire. The green spaces may be categorised in more than one category (e.g. 'Območje ob Savi' (Sava river area) could be categorised as a green corridor or as 'The beach/lake/water') but in accordance with this thesis' topic, they were categorised on the basis of their predominant (peri-urban) character. 191
Table 6.3: The number of people who selected 'Rožnik in Šišenski hrib', as the peri-urban green space they visited most often, for various activities 193
Table 6.4: Chi-square Test – The differences between the respondents from Ljubljana and Edinburgh in terms of the activities they would undertake in peri-urban green spaces 194
Table 6.6: Frequency of visiting the listed green open spaces, of people that visit peri-urban areas. 196

Table 6.7: Frequency of visits made to the listed green open spaces, grouped by green space type, for the two case studies. 196
Table 6.8: Ranked reasons for not visiting the peri-urban green open spaces more often, by the case study city. 197
Table 6.9: Reasons for not visiting peri-urban green spaces more often, by the case study city. 198
Table 6.10: Mann-Whitney U Test – The attitudes towards the future management actions of peri-urban green open spaces, for the two case study cities. 201
Table 6.11: Chi-square Crosstabs test – The significant differences, between both cities, in respondents' choice of transport. 201
Table 6.12: Activities for which respondents would most often use a bicycle, for each case study city. 202
Table 6.13: Measures that would enhance the attractiveness of cycling, for each case study city. 203
Table 6.14: The time the respondents would be willing to travel to specific green space types, for each case study city. 204
Table 6.15: Means to go to respondents' most often visited peri-urban green space, for each case study city. 205
Table 6.16: Deciding factors in terms of respondents' choice of transport when planning a visit to peri-urban spaces, for each case study city. 206
Table 6.17: The level of satisfaction with the maintenance of, and access to respondents' most often visited peri-urban green space, for each case study city. 207
Table 6.18: Variables used in logistic regression model, to predict respondents' frequency of use of peri-urban green space. 214
Table 6.19: Ljubljana – The outcome factors of the factor analysis. Only primary loadings on the factor with values above 0.6 were considered. 216
Table 6.20: Edinburgh – The outcome factors of the factor analysis. Only primary loadings on the factor with values above 0.6 were considered. 217
Table 7.1: The objectives sought when conducting the focus groups. 224
Table 7.2: The concepts, which have emerged from the focus groups' participants, when characterising the peri-urban areas. 226
Table 7.3: The deciding factors when choosing a green space to visit. 229
Table 7.4: The participants' preferred landscape features. 237
Table 7.5: The participants' preferred green space types. 240
Table 7.6: Visiting a green space alone or in company. 242
Table 7.7: Participants' opinions of the management of peri-urban green open spaces. 247
Table 7.8: The constraints participants cited for not using peri-urban green spaces. 249
Table 7.9: The reasons behind participants' preferences for the use of a specific means of transport. 254
Table 7.10: The participants' opinions of and satisfaction with the transportation infrastructure and traffic management. 259

Table 7.11: The participants' willingness to change their travel habits if the transportation infrastructure and traffic management were improved. 261
Table 8.1: Ljubljana – Three accessibility classes for four considered transport modes, by area and by population. 294
Table 8.2: Ljubljana – Accessibility clusters, by area and by population. 300
Table 8.3: Edinburgh – Three accessibility classes for four considered transport modes, by area and by population. 302
Table 8.4: Edinburgh – Accessibility clusters, by area and by population. 307

Chapter 1: Introduction

1.1 Prologue

Urbanisation is one of the basic characteristics of European civilisation. European cities have long been considered as compact, and the spatial and social contrast between cities and surrounding rural areas has been considered great. However, over previous decades the cities across Europe have been facing urban sprawl, which has been changing their compact layout (EEA, 2006).

A key facilitator for urban sprawl is the transportation infrastructure (EEA, 2006; Tjallingii, 2000), which enables accessibility to those areas not yet urbanised. In order to preserve their compact layout, and to develop cities and countryside as separate spatial entities, European cities have attempted to control development through various spatial strategies (e.g. green belt and green fingers). These strategies have proven to be more or less successful, however the distinction between the rural and urban setting is never completely clear and the existence of peri-urban landscapes is now generally recognised and accepted (Simon et al., 2006).

Despite its recognition, peri-urban landscape has, in the field of landscape architecture and spatial planning, only become a focus of academic discussions in recent decades and until now has not been studied in detail (Qviström and Saltzman, 2006). This is largely due to: firstly, the fact that the peri-urban landscape is a relatively new type of landscape and, therefore, there has not been a general consent on the space that this landscape specifically relates to. In addition, a number of terms have been used to address this space, such as 'peri-urban', 'semi-urban', 'urban-rural', etc. which also vary according to different languages and cultural contexts (Simon et al., 2006) and thus make this space even less defined and distinct. However, in English, the term 'peri-urban' has been generally accepted (Simon et al., 2006) and is therefore consistently used also throughout this thesis. Accordingly, peri-urban areas, in this research, relate to the space on the edge of the cities, which represents an interface between rural and urban and where urban and rural

development processes meet, mix and interact (Cabello et al., 2012; Hall et al., 2004; Meeus and Gulinck, 2008; Phillips et al., 1999a).

Secondly, due to the lack of knowledge on their characteristics and general view of these landscapes as transient landscapes which will be developed in the future, peri-urban areas have been often neglected by the government and the planning profession as well as the general public (Qviström and Saltzman, 2007; Shoard, 2000). The ignorance of the current state of these spaces, in combination with weak land use planning, however, may have a negative impact on their long-term development in terms of losing the intrinsic value of peri-urban open spaces and consequently people's attachment to these places, decreasing their ecological value and their physical accessibility for leisure purposes, and perhaps lead to unwanted patterns of development, such as urban sprawl.

Meanwhile, this 'space on the edge of the cities' has been recognised as important for the provision of extensive green open spaces for leisure and recreation of urban and suburban dwellers (Cadieux, 2008; Jenks et al., 1996; Neuvonen et al., 2007; Palang et al., 2011; Semm and Palang, 2010; Tyrväinen et al., 2007). According to the very illustrative fact provided by the European Environmental Agency (EEA), "today approximately 75% of the European population live in urban areas, while still enjoying access to extensive natural or semi-natural landscapes" (EEA, 2006, p.6). At this point a question arises: What is this access? How does it fulfil the societal, ecologic and economic demands of society? Furthermore, what are these landscapes? What is their societal and ecological role and how can it be preserved?

Thus, this study is concerned with the current state of the peri-urban landscape, its characteristics and drivers of change, with a focus on accessibility. Accordingly, the interest of the study lies in exploring people's landscape perceptions and uses in relation to their changing perception of peri-urban areas' accessibility.

1.2 The problem definition

Development pressures are the highest on the edges of cities, mainly because of economic reasons (the price of land is lower than in the cities; cheap agricultural land is often converted into built up land). This is often reflected in urban sprawl.[1]

Sprawled development has many negative consequences for both the city and its rural surroundings. One of the biggest issues pertains to social segregation, which arises from the combination of several factors, e.g. urban expansion in combination with prioritisation of the use of private transportation and neglect of public transportation network development. According to the EEA report on the state of transport in Europe (EEA, 2009), between 1995 and 2006 car ownership increased by 22%, and passenger car use increased by 18%. The prioritisation of private car use has also a strong effect on the accessibility to the extensive natural landscapes outside of the cities which become inaccessible for inner-city inhabitants who do not own a car (EEA, 2006; Van Herzele et al., 2005). Thus, this thesis is focused on their perspective with regard to the use of and, accessibility to, peri-urban green spaces.

Furthermore, other negative consequences of sprawled development relate to the consumption of agricultural land and natural environments due to low-density development[2]. In addition, private transportation is generally recognised as unsustainable in terms of air pollution and energy consumption. However, more sustainable transportation means (e.g. a rail network) which enable accessibility of the natural landscapes simultaneously create an incentive for a new wave of urban sprawl (Gayda et al., 2005).

Although the reasons for urban sprawl and the reduced accessibility of peri-urban green open spaces (as a consequence) vary in line with the individual characteristics of cities, sprawled peri-urban areas are in general identified as problematic. There is a large body of research on the topic of urban sprawl and the development of peri-

[1] 'Urban sprawl' is according to EEA (2006, p.6): "[…] a physical pattern of low-density expansion of large urban areas". A large body of literature describes sprawled development as patchy, scattered and leap-frog (EEA, 2006; Whyte, 1958; Harvey and Clark, 1965), and often characterized by the high use of private transportation (EEA, 2006; Pryor, 1969).

[2] However, there is no common agreement on the most balanced population density level.

urban areas, e.g. PLUREL (Peri-Urban Land Use Relationships); SCATTER (Sprawling Cities And Transport – from Evaluation to Recommendations); MOLAND (Monitoring Land Use/Cover Dynamics); SURF (The Sustainable Urban Fringes) and Peri-urban parks. These projects discuss the topic in a broader sense, since they are carried out mainly at a national and regional level. Existing studies have tended to focus on areas of natural beauty on the edge of cities, like urban woodlands or protected natural areas (e.g. regional and country parks); in short, on the landscapes that are recognised as being worthy of special designation, valuable and important. 'Everyday landscapes', which (as explicitly mentioned in the European Landscape Convention (Council of Europe, 2000) are also important for people's quality of life, have thus far been neglected.

1.2.1 The characteristics of and, attitude to, peri-urban open spaces

In planning practice and policy formulation, two extremes can be often observed whereby, on one side, there is complete conservation of specific peri-urban landscapes whilst, on the other, the planning regulations are lax and therefore the pressure of development often results in a fragmented and sprawled landscape. In this sense, Shoard (2000, p.86) critiqued an ignorance of fringe areas in a governmental document (Planning Policy Guidance Note 7.): "This document sees interfacial land as essentially problem land with no intrinsically valuable features: its use is to offer space for functions like waste disposal and informal recreation in order to allow more valuable land to remain untouched." In practice, a good example of the first extreme is a formal designation of Natura 2000[3] areas which can be very rigid and exclusive of other uses, as some research has shown (Apostolopoulou and Pantis, 2009; Hiedanpää, 2002). On the other hand, in Europe, in the decade 1990-2000, 0.25% of the total area of agriculture, forest and natural land has been consumed due to the urban growth (EEA, 2006) although the population density of the areas considered as peri-urban is half of the urban areas (Piorr et al., 2011).

3 Natura 2000 is an EU wide network of nature protection areas established under the 1992 Habitats Directive. The aim of the network is to assure the long-term survival of Europe's most valuable and threatened species and habitats.

It can be assumed that these deviations are due to the lack of knowledge about peri-urban landscape types and their associated characteristics. The need for more research on this topic has been stressed, for example by Qviström and Saltzman (2006, p.39): "the lack of information, representations and statistics, and so on, is in itself an important reason to further explore landscapes of the inner fringe."

Furthermore, this thesis sees the importance of gaining information on people's needs and preferences for these spaces, and acknowledging them in planning and design practice. The present low recognition of people's positive feelings towards green environments in planning policies and practice has been argued by numerous researchers. For example, van Zoest (1998, p.77) stressed: "Despite strong public sentiments, the green dimension of urban planning still attracts relatively little attention from urban planners. Moreover, the planning and design of green spaces is hardly ever based upon scientific knowledge about human needs and preferences." This thesis assumes that the reason why people's perceptions and attitudes have not been recoginsed to a significant extent, in planning policies, may be the format in which the researchers present their findings and gained knowledge about this to authorities and planners. Tjallingii (Attwell et al., 2005, p.24) exposed this problem of transferring the information from research to practice: "These studies, too, do not yet bridge the gap between research and practice. They create a basis of *knowing that* green is healthy, but there is still a gap between this general understanding of researchers and the questions of practitioners interested in knowing how green areas can make cities more healthy." A similar problem has been exposed by Van Herzele and Wiedemann (2003, p.124): "Plenty of research results exist on the public perception and appreciation of urban greening. This information however, is seldom in a format which can be used for implementation in policy and planning."

Moreover, the recognition of people's needs and preferences in planning practice has been stressed as highly important for inclusive planning. Botequilha Leitão and Ahern (2002, p.69) argued: "Public participation in the planning process is essential to successful planning. Research has shown that people are more likely to accept an issue resolved when they have had a voice in the decision-making process (Decker

and Chase, 1997).” However, despite the fact that in recent years there has been some effort on behalf of individual communities and local authorities to integrate people’s wishes and values in future development (Aalbers et al., 2009; Hiedanpää, 2002), urban planning and policy still lacks inclusive planning in terms of enabling easy access to extensive peri-urban open spaces for leisure and recreational use, to those who do not live close to such areas.

Being in touch with nature is an intrinsic human need and thus important for people’s quality of life, which has been recurrently stressed in the academic research (Kaplan and Kaplan, 1989; Ward Thompson, 2002). In fact, the phenomenon of urban sprawl is an example of the consequences when this need has been given little attention. For example, Päivänen (1996, in Neuvonen et al., 2007) stressed the peri-urban dwellers’ appreciation of peri-urban landscapes for their naturalness and spaciousness, and Piorr et al. (2011) have shown the migration of people to urban edges to be close to natural environments. However, if people move to the city edges to be closer to extensive green open spaces, this, in turn, often results in urban sprawl. This pattern has been observed in Marseilles, where, in the past 25 years, 30% of the city’s inhabitants, of whom most are higher and medium income families, have moved from the inner-city areas to its outskirts. Tjallingi reports (Attwell et al., 2005, p.23): “A majority of the urban population has more to spend and has a car. Most people have more time for leisure too. As a result car trips to green areas have increased drastically, much more than journeys from home to work. These trends could lead to a social segregation of people with more access to green spaces from those with less.”

Accordingly, this thesis recognises the urge to research peri-urban spaces in more detail, in order to elucidate the state of peri-urban open spaces and to gain knowledge about what attributes of peri-urban landscapes are valuable for different stakeholders. The European Landscape Convention (Council of Europe, 2000) has stressed the importance of assuring a variety of different green spaces, as already mentioned in the previous section. Therefore, more knowledge is needed, on the types of peri-urban green open spaces that people are attracted to and how this can be resolved and

integrated within current spatial policies, especially in the policies that deal with transportation infrastructure (as this is the primary means of peri-urban accessibility). A socially inclusive approach to planning is a key to sustainable accessibility and a viable use of such peri-urban areas.

1.2.2 Leisure accessibility to peri-urban green open spaces

An important fact for the present research is that leisure trips in Europe account for as much as one-third of all trips. The pattern of leisure trips is less predictable than commuter journeys (EEA, 2009). Leisure trips "may involve a greater load (baggage), and travel in areas where the public transport system is less developed (e.g. vacation house trips) or less known to the user. The demands that leisure travel places on public transport systems therefore differ greatly from those imposed by commuters" (EEA, 2009, p.28). Parallel, private transport in Europe has continued to increase which has negative impact on all segments of the environment (EEA, 2009). Both phenomena are highly important in terms of planning for inclusive and sustainable accessibility of open spaces on the edge of the cities.

Transport network and land use patterns are interrelated (EEA, 2009; Silva, 2008). As previously mentioned, low density development, often typical for peri-urban areas, encourages car use and vice versa. In addition, this has negative effects on the sustainable development of these areas. As stressed in the EEA report on transport in Europe (EEA, 2009, p.30), "scattered low density urban development, is therefore a poor strategy for making the transport system more sustainable." However, any transport network which enables greater accessibility of the peri-urban landscape, in turn, can trigger negative environmental consequences, e.g. physical implementation of transport infrastructure slices the land and consequently increases habitat fragmentation of the landscape (Uuemaa et al., 2009). To sustain both natural systems, as well as people, land use arrangements, in relation to transportation network, are therefore deemed important (EEA, 2009; Forman, 1995).

Thus this research sees the opportunity in investigating people's leisure and recreational patterns and possibilities of linking them with (more) sustainable access to peri-urban green spaces, favourable to people.

1.3 Research questions

This thesis seeks to address different types of peri-urban landscape within the spatial and social context. The question, central to this research, is: **How can the knowledge of inner-city dwellers' perceptions and uses of peri-urban green spaces contribute to more effective management strategies for this space?**

In addition, the thesis aims to answer the following sub-questions with the support of selected theory and practical methods:

- What type of peri-urban landscape are inner-city dwellers attracted to for their leisure activities?
- What are their preferences with regards to the peri-urban landscape?
- What site features are they attracted to?
- How do perceptions of access by means of transport affect usage?
- How do current spatial planning and transportation policies match with inner-city dwellers' wishes and preferences for peri-urban landscape use? How do the policies enable or create barriers to the accessibility of the peri-urban landscape?

1.4 Research strategy

This research sits in a broader context of interest in ways to ensure sustainable development..Following this, the intention of this research is to explore the state of peri-urban green spaces and opportunities for their sustainable development. As already mentioned, the knowledge, opinions and perceptions of peri-urban areas vary greatly among different users, authorities, researchers, professionals and other stakeholders. Therefore, the study is concerned with the question of how can the social and spatial issues be steered in order to assure sustainable future of peri-urban open spaces. To understand both social and spatial context, a conceptual framework

was established through which the appropriate research methodology for further investigation has been developed.

In developing the framework for a 'social context' methodology, the study has been concerned with the questions of what are "the needs of the present" (WCED, 1987, p.43), how to reveal them and, subsequently, how to use these findings to support the sustainable development of the peri-urban landscape. Striving towards sustainable development, knowledge of people's needs has been identified as being essential for those who guide the future development of peri-urban areas. The preferences of people with regards to place have been conceptually explored within the theories of environmental psychology and human geography. A *sense of place* concept has been used in order to understand how people interact with their environment. The concept offers opportunities to understand what kind of spaces people want and will use, which is crucial for inclusive planning and policy, especially regarding the provision of appropriate accessibility levels to peri-urban areas since several studies have revealed the great importance of access for the use of green open spaces (Coombes et al., 2010; Van Herzele et al., 2005).

The research on spatial patterns is led by methodologies which are commonly used in the landscape planning discipline. Landscape planning promotes analysis of the space in individual categories of information (Swaffield and Primdahl, 2006). This so-called layering was recognised as suitable to set a basis for this thesis' spatial analysis.

The reviewed theories, principles and aspects are a foundation for the guidance of the empirical part of the research, based on two case study cities, and the application of selected methods. The methods are divided into 'spatial methods' which investigated peri-urban land uses and transportation network, and 'social methods' which investigated the use of, and accessibility to, peri-urban green spaces. However, it should be noted that in answering the research questions, the findings of all methods have been triangulated between each other and with the theories reviewed, in order to fully explore all possible interrelations and connections.

1.5 Aims and objectives

The overarching aim of this study is to elucidate the spatial and social context of the peri-urban landscape in order to promote the sustainable planning of these areas. The thesis strives at emphasising the importance of involvement of people in decision making, since this was already put forward in the Brundtland Commission (WCED, 1987) as a way to achieve sustainable development. By using empirical evidence, this thesis anticipates building knowledge for evidence-based policy, which "helps people make well-informed decisions about policies, programs and projects by putting the best available evidence from research at the heart of policy development and implementation" (Davies, 1999, cited in Swaffield and Primdahl, 2006).

Furthermore, this thesis has outlined several specific objectives:

- To elucidate the notion and character of peri-urban areas in terms of how this space is perceived by different stakeholders;
- To identify the inner-city dwellers' leisure and recreational patterns of peri-urban green space use, perceptions and attitudes to these spaces;
- To identify the peri-urban attributes and land uses in terms of peri-urban quality and accessibility;
- To define the degree to which current spatial policies meet people's preferences and need for the use of the peri-urban landscape and, on this basis, provide of guidelines for further policy implementation.

1.6 Thesis structure

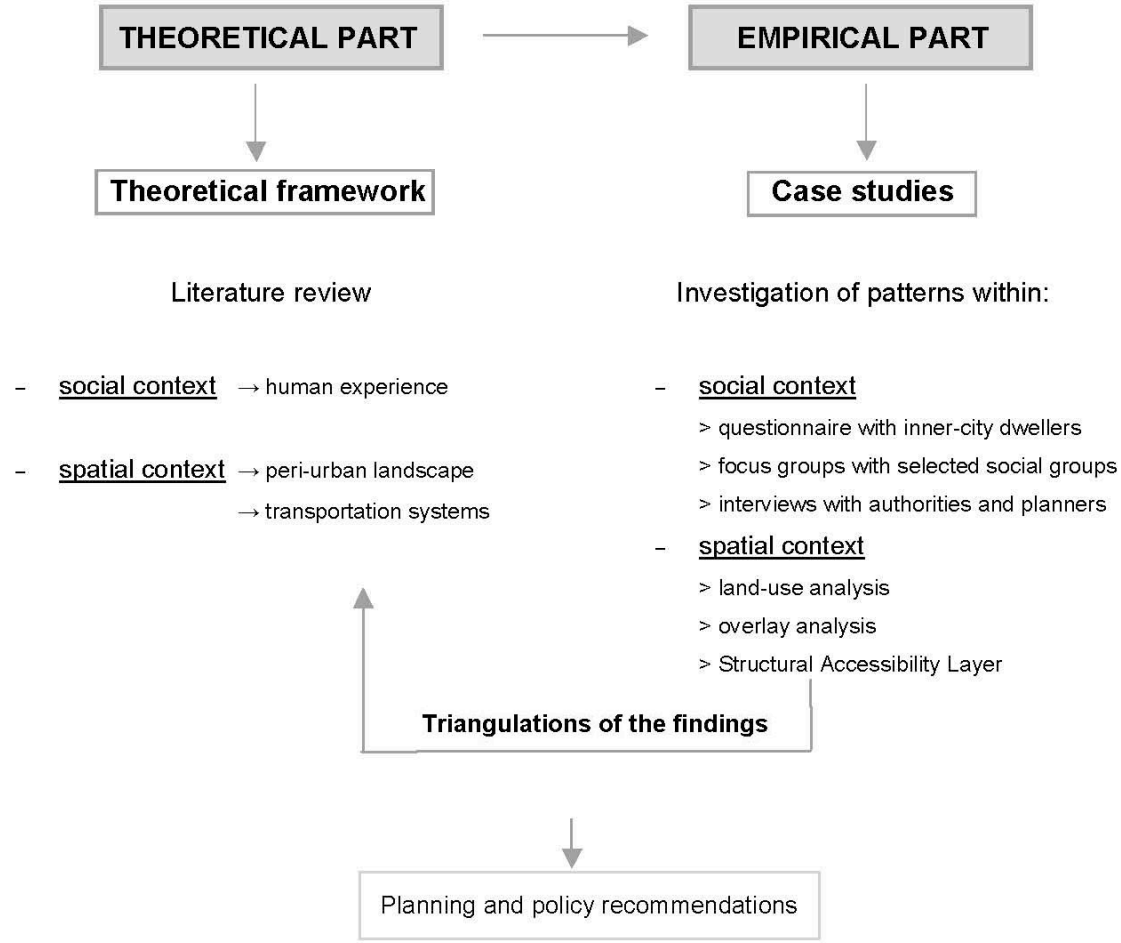


Figure 1.1: Diagram representing the thesis structure (Source: Author's own).

Chapter One has identified the research problems, gaps in to-date knowledge of the topic researched, and a general strategy to address the issues uncovered. Chapter Two discusses a selection of the two case study cities, Ljubljana and Edinburgh. It outlines the main reasons for the selection of these two cities and then it describes and compares their fundamental characteristics. Chapter Three discusses the up-to-date research findings on the topic of peri-urban landscape and transport systems and theoretical understandings of the concept, relevant for this research, i.e. people-place relationship. Chapter Four outlines the research strategy, design and methods selected for empirical investigation. The selected methods are divided into a social and a spatial part, but all are implemented in the two case studies. The analyses of the social part's findings are presented in Chapters Six and Seven, and the analysis of

the spatial part, in Chapter Eight. Chapter Nine draws together the findings, gained through the empirical work, in order to answer the posited research questions. It also discusses the used methodology, points to the contribution of this thesis to research knowledge, limitations of this research and opportunities for future research.

Chapter 2: Case study cities

The previous chapter introduced the main issues to be explored in this thesis. It has approached peri-urban area as a specific morphological type which also represents an interface between rural and urban landscapes. To explore the characteristics of peri-urban landscape, people's use and attitudes, and accessibility relationships on an empirical basis, two cities have been selected for the case study. Ljubljana and Edinburgh offered an appropriate context to gain reliable and relevant information and to provide the possibility for comparison.

In the selection criteria for the case studies, the focus was on medium-sized European cities. The main reasons for this were that among more than 70% of people across Europe who live in urbanised areas (EEA, 2006), almost half (44%) of them live in city regions of less than 500,000 inhabitants (Giffinger et al., 2007b). This category of cities can be considered as 'medium-sized' on a European scale. These cities have an important role to play in Europe's economic development and competitiveness but tend to be overlooked in urban research studies which favour focusing on larger cities and metropolises (Giffinger et al., 2007a; Partridge, 2010).

Furthermore, the significant growth of urbanisation in the past decades has affected not only larger urbanised parts of Europe, but also medium-sized cities. The intensity of this process varies across countries and regions and depends upon various factors such as the economic situation of the region, the type of territorial governance implemented, land use regulations, etc (Lennert et al., 2010). However, across the whole European territory, land use data indicate a strong increase in the surface of urban areas (all large, medium and small ones), but not in population. For example, from the 1990s to 2000, the population in EU25 increased by 2% whilst the urban area increased by more than 5% (Jansson et al., 2009, in Ravetz et al., 2013), often with a trend towards de-centralisation and urban sprawl (Ravetz et al., 2013). The challenge, in achieving evenly distributed urbanisation and accordingly territorial cohesion as promoted in the European Spatial Development Perspective (ESPD,

1999), is posited at all scales and it therefore requires tackling via countries, regions as well as cities.

Accordingly, given the fast growth of peri-urban areas at present and in future projections (Nilsson et al., 2013), medium-sized European cities are, in cases where there is an absence of comprehensive planning, particularly exposed to sprawled development and other negative effects of urbanisation and peri-urbanisation. To achieve integrated development, what is important are the dynamics within rural-urban regions, since strategies on this level can bridge the gap between EU territorial development and decisions made at a local level (Nilsson et al., 2013). Therefore, in this chapter, firstly, the two case study cities are discussed within the classification of rural-urban regions and with regard to urban sprawl and peri-urban issues. Then, the main morphological, functional and administrative characteristics of each city are overviewed and compared. Finally, the chapter justifies the selection of these two cities with respect to addressing, successfully, the research questions.

2.1 The criteria for selection of the case study cities

The main arguments for selecting these two cities were considered according to this study's aim, timeframe and the fact that the research was undertaken by a single researcher and thus these factors imposed some limitations and constraints, to a certain extent. Accordingly, Ljubljana and Edinburgh were selected on the basis of the following criteria:

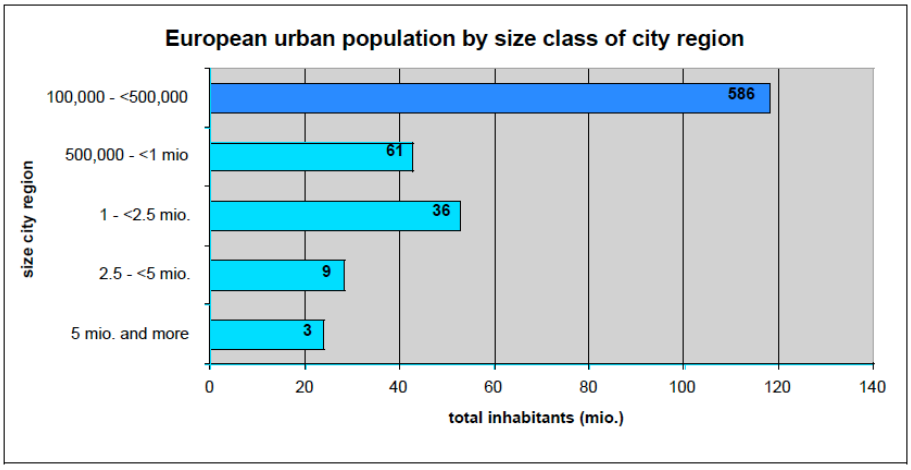
- Focus on medium-sized European cities;
- Typology of rural-urban regions;
- Spatial strategy (e.g. green belt, green wedges, green heart, etc.): the aim was to compare cities with a different spatial strategy, in order to assess spatial strategies with regard to peri-urbanisation and sprawl issues;
- Accessibility of relevant databases;
- Pragmatic reasons, such as: language (barrier), known network of people who could help with datasets provision, researcher's previous knowledge of the city's (Ljubljana) planning system, governance and spatial issues, etc.;

- The researcher's initial wish, to research the peri-urban and sprawl issues of Ljubljana, since the idea to undertake this research had been initiated by the researcher's engagement with this city's problems of peri-urban areas' (in)accessibility.

The first two points are discussed in Sections 2.1.1 and 2.1.2 respectively. The spatial strategies of Ljubljana and Edinburgh are discussed in Section 2.3. A general overview of spatial strategies is provided in Chapter Three (Section 3.2.2).

2.1.1 Medium-sized cities in a pan-European frame

As discussed in the introduction to this chapter, the focus of this research was on medium-sized European cities. More accurately, on cities with a population of between 100,000-500,000 inhabitants, since, as Figure 2.1 shows, most of the population of Europe lives in cities in this range.



Source: Data derived from database on Functional Urban Areas from Espon 1.1.1 (Nordregio *et al*, 2004). The number of city regions in each particular size class is incorporated in each bar.

Figure 2.1: European urban population by size class of city region, 2000 (Giffinger et al., 2007b, illus., Figure 1).

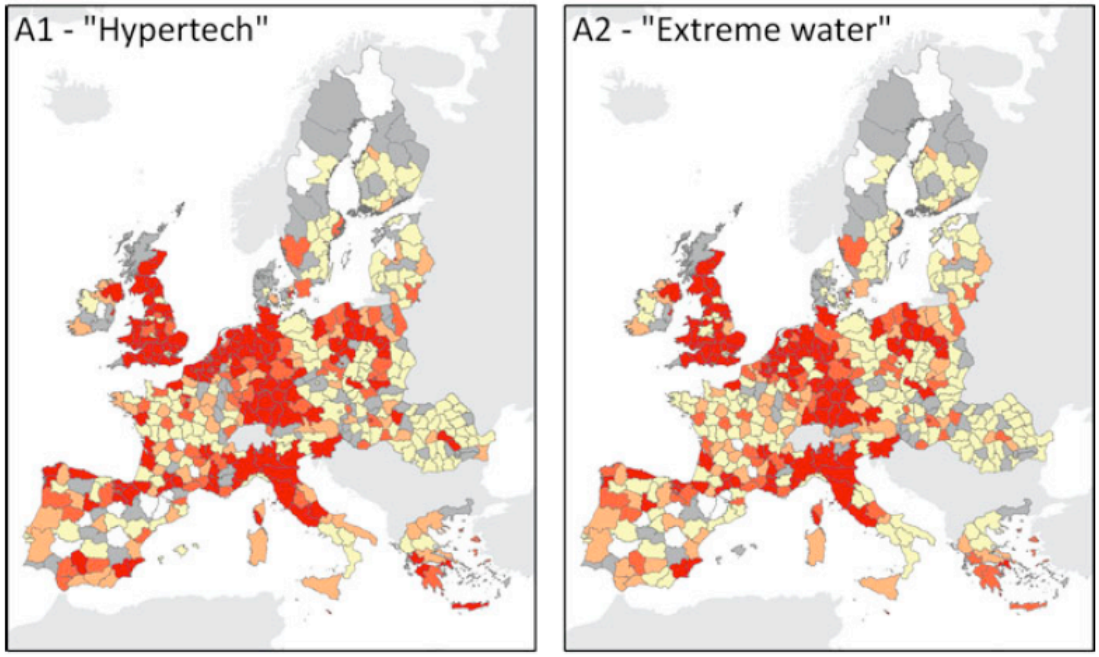
Furthermore, the current and future projections indicate a higher growth of peri-urban areas in comparison with urban areas, in cities of all sizes. The scenarios,

developed within the PLUREL project[4], for instance, explored possible land use change in the future. In all scenarios, artificial surfaces would increase the fastest in peri-urban areas (Table 2.1; Figure 2.2).

Sub-region	Artificial surfaces area in 2000 (with share of total area)[b]	Annual increase by scenario			
		A1 (%)	A2 (%)	B1 (%)	B2 (%)
Urban	48,765 km^2 (79.1 %)	0.65	0.61	0.50	0.48
Peri-urban	47,532 km^2 (8.3 %)	2.46	2.06	1.44	1.44
Rural	72,182 km^2 (2.5 %)	2.13	1.75	1.24	1.24
Total	168,478 km^2 (4.7 %)	1.86	1.55	1.10	1.09

[a]Without Bulgaria.
[b]The remaining areas which are not classified are unpopulated areas as water, rocks and glacier surfaces.

Table 2.1: Growth of artificial surface in urban, peri-urban and rural areas, 2000-2025, EU27[a] (Ravetz et al., 2013, p.35).



(continued on the next page)

[4] PLUREL project ("Peri-urban land use relationships – Strategies and sustainability assessment tools for urban-rural linkages") explored peri-urbanisation within a pan-European frame and it aimed to develop new tools which would contribute to sustainability of rural-urban land use.

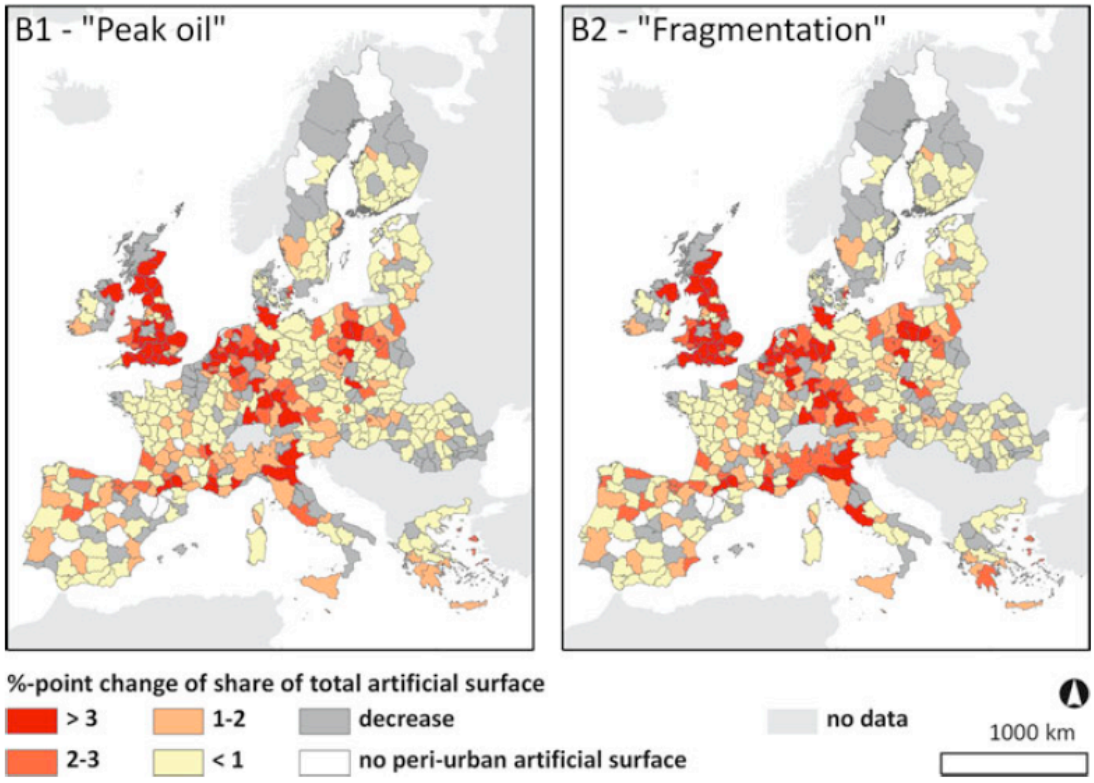


Figure 2.2: Change of peri-urban artificial surface share 2000-2025 (The maps show the projected change of the share in artificial surface in peri-urban areas relative to the total artificial surface in percentage points. In the majority of regions, the share of artificial surface in peri-urban areas would increase.) (Ravetz et al., 2013, p.40, illus., Fig.2.9).

To date, many scholars have argued for taking a regional perspective as being appropriate to deal strategically with the problems of urban expansion, since plans on this level deal with both rural and urban dynamics (Piorr et al., 2011; Turok and Bailey, 2002). There have been many different regional typologies developed on a pan-European level, taking various approaches and criteria to sort by type. They are briefly described in the next section (2.1.2), which is followed by the selection of the typology which was the basis for this research's selection of the case study cities.

2.1.2 Typology of rural-urban regions

2.1.2.1 A review of the European rural-urban typologies on a regional and metropolitan level

First attempts at regional typologies date back to the 1970s, when the interest in international comparative research on cities and urbanization processes started to grow (Korcelli, 2008). Since then, the bulk of research on the rural-urban relationship was carried out, in a search for the answer as to what constitutes peri-urban.

The discipline of regional geography has focused on the functional aspect of urban regions. Urban regions are characterised by internally differentiated structure, and have included cities together with the surrounding suburban and rural zones, interconnected by intense commuter flows (Korcelli, 2008). Table 2.2, below, provides an overview of state-of-the-art typologies of European rural-urban regions (adapted after Korcelli, 2008).

Classification types	Criteria/measures	Author
Predominantly urban (PU): if the share of population living in rural LAU2 is below 15%; **Intermediate (IN)**: if the share of population living in rural LAU2 is between 15 % and 50%; **Predominantly rural (PR)**: if the share of population living in rural LAU2 is higher than 50%.	- Population density; - Size of the urban centres located within a region.	OECD (Organisation for Economic Co-operation and Development) (OECD, 2010)
Densely populated zones: groups of contiguous municipalities, each with a population density superior to 500 inhabitants/km², and a total population for the zone of at least 50,000 inhabitants; **Intermediate zones:** these are groups of municipalities, each with a density superior to 100 inhabitants/km², not belonging to a densely populated zone. The zone's total population must be at least 50,000 inhabitants, or it must be adjacent to a densely populated zone; **Sparsely populated zones:** these are groups of municipalities not classified as either densely populated or intermediate.	- Degree of urbanisation	Eurostat (Dijkstra and Poelman, 2010)
Metropolitan areas; Polycentric areas; Urbanised rural areas; Deep rural areas; Peripheral areas	- Settlement structure and accessibility of infrastructure; - Diversification of the economy; - Territorial impacts of structural change in	Strategic Study Towards a New Rural-Urban Partnership in Europe, carried out within the Study Programme in

	agriculture; - Conservation and enhancement of natural heritage; - The role of cultural heritage; - Cooperation between rural and urban authorities at the local administration level.	European Spatial Planning (CSG, 1999, in Korcelli, 2008)
Regions dominated by a large metropolis; Polycentric regions with high urban and rural population densities; Polycentric regions high urban population densities; Regions characterized by networks of medium – sized and small towns; Remote rural areas.	- Urbanization rate; - Rural and urban population densities; - Average spacing of towns with above 10 thousand inhabitants; - An index of inequality on towns' size; - A city primacy index; - Population size category of the main urban centre	(Pumain, 1999, in Korcelli, 2008)
Polarised (metropolitan and non-metropolitan); Equipotential (balanced) networks of three levels; Hierarchical networks.	functional criteria, such as economic leadership, financial sector, research, education, communication, tourism and culture	(Conti and Salone, 1999, in Korcelli, 2008)
Functional Urban Areas (FUA): an urban core of at least 15,000 inhabitants and over 50,000 in total population; **Metropolitan European Growth Areas (MEGA):** criteria is population size (the lower boundary was set – with exceptions – at 500,000 inhabitants) and high – ranking functions in the domain of transportation, manufacturing, higher education and decision making in both public and private sector) **Potential Urban Strategic Horizons (PUSH):** Four types of PUSH areas were distinguished, according to spatial concentration level: • monocentric, • polycentric, • sprawl, • sparsely populated (rural); **Potential Integration Areas (PIA)**		ESPON 1.1.1. project (ESPON, 2005)
Individual types of urban- rural regions are characterized by: • High urban influence, high human footprint • High urban influence, medium human footprint • High urban influence, low human footprint • Low urban influence, high human footprint • Low urban influence, medium human footprint • Low urban influence, low human footprint	- The level of urban influence upon rural areas; - The intensity of human intervention. Indicators are population density and land cover data	Urban-Rural relations in Europe (2004), constructed within the framework of ESPON 1.1.2 project (Korcelli, 2008)
• Village periurban, • Diffuse periurban, • Chain periurban, • In-place periurban, • Absorbed periurban.	In terms of migration, the peri-urban environments play a mediating role between rural and urban areas. Such environments are places of dynamic social change.	(Jaquinta and Drescher, 2000, in Korcelli, 2008)
Four types of urban regions, related to their functional profile	Consisting of an economic core, with employment	GEMACA project (Chesive and

	density of more than 7 jobs per hectare, and neighbouring municipalities, in which more than 10 percent of the active population commute to work to the core	Gornostaeva, 2002, in Korcelli, 2008)
• Sprawl as an emergent polycentric region; • Sprawl as a scattered suburbs; • Sprawl of peripheral fringes; • Sprawl forms of commercial strips and business centres.	Impact of urban sprawl	(Batty et al., 2002, in Korcelli, 2008)
- Urban area: population density is more than 500 inhabitants per km^2; - Peri-urban: population density is 150-500 inhabitants per km^2, - Rural areas: population density is less than 150 inhabitants per km^2.	Population density	(Perpar, 2009)[5]

Table 2.2: Conceptual peri-urban typologies in Europe (adapted after Korcelli, 2008).

PLUREL developed a regional typology, based on population distribution and density, and land use data, in which the EU 27 territory was grouped into urban, peri-urban and rural areas (Figure 2.4). The definition and characterisation of peri-urban area is discussed in detail in Chapter Three, however, a regional typology, developed by the PLUREL project, was the basis of the case study selection for this research and is briefly explained in the next section.

2.1.2.2 PLUREL typology of rural-urban regions (RURs)

PLUREL designated the rural-urban region (RUR) as a concept to deal with the problems of urban expansion. According to PLUREL (Piorr et al., 2011, p.21), "RUR can be considered as the spatial extension of the Functional Urban Area (see e.g. ESPON 1.1.1, in ESPON, 2005), including both the peri-urban and rural part of an urban catchment up to a distance where daily commuting ceases due to travel times becoming too long". The main purpose, in establishing this new classification of RURs on NUTS3 level for the entire Europe 27 territory was to investigate relationships between the core city regions, peri-urban regions and their rural hinterland.

[5] The population densities of this typology were used in this thesis for the overlay analysis. The main reasons were the rigour of these criteria and that the criteria were applied to the Slovenian case.

The RUR typology considered four different characteristics (Loibl et al., 2010, p.3):

- **Morphology:** core city pattern and related sub centres: monocentric/ polycentric and some derivates;
- **Shape:** compact/jagged/dispersed;
- **Dynamics:** growing/shrinking trends in core cities/surroundings;
- **Planning policy systems:** local/federal/centralized.

With regard to **morphology**, PLUREL aimed to define classes of RUR "which show high spatial similarity, being characterised by population size, population density and settlement distribution (mono-centric vs. polycentric). These types of different RURs were to be used as the bases for the sustainability impact assessment of land use change, particularly urban growth" (Zasada et al., 2013, p.54). According to PLUREL's findings, both case study cities, Ljubljana and Edinburgh, were classified as monocentric conurbation (Figure 2.3). However, it should be noted that in this classification, the capitals of almost all countries show monocentric conurbation characteristics (Loibl et al., 2010).

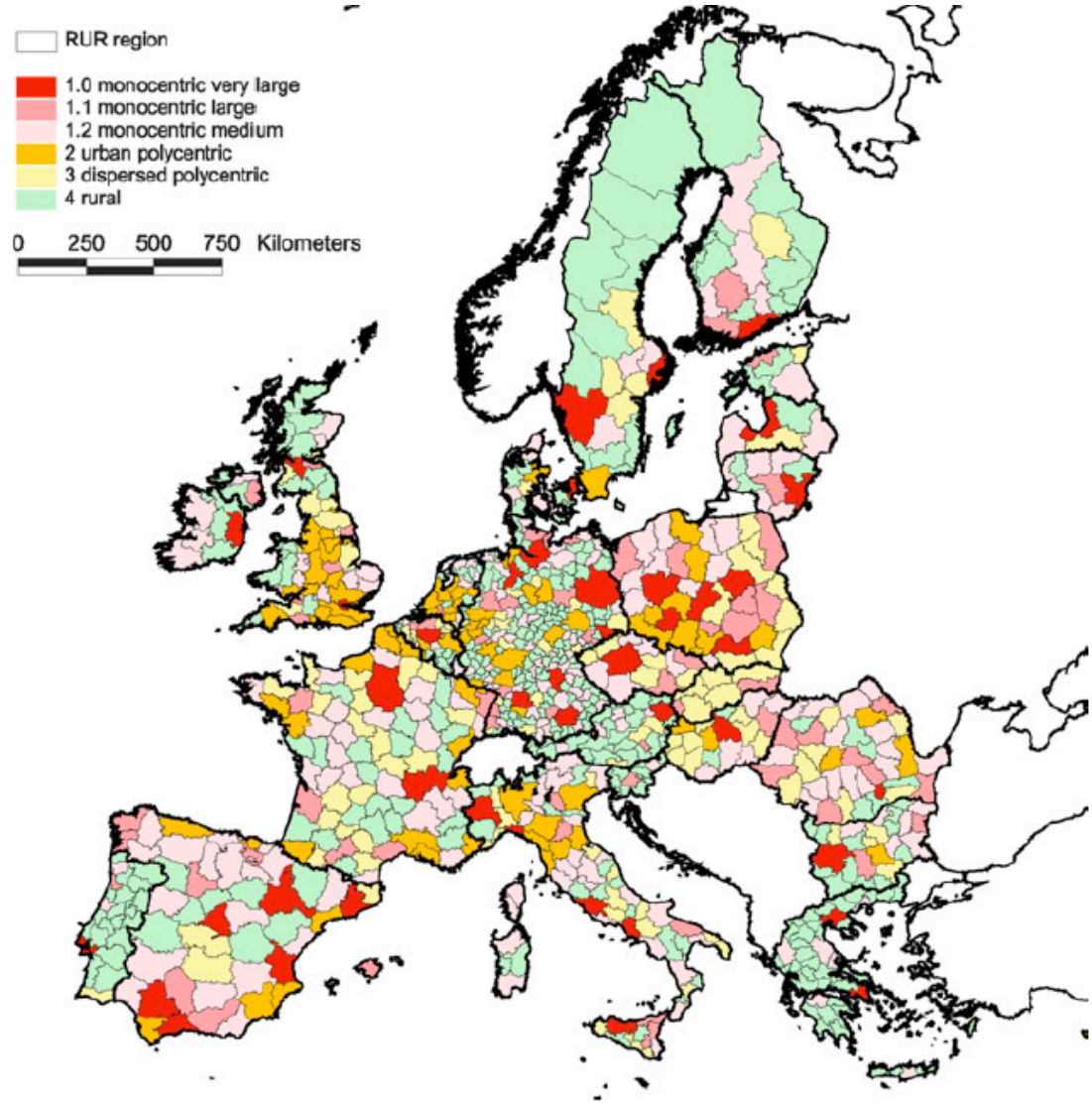


Figure 2.3: RUR delineation and morphology classification for EU (Zasada et al., 2013, p.58, illus., Fig.3.2).

With regard to **shape**, the interest of this thesis was urban fragmentation. According to findings from Loibl et al. (2010), Ljubljana appeared to be highly fragmented whereas Edinburgh was in a medium category.

In accordance with the main research interests of this study, i.e. to explore the notion and character of peri-urban areas and to define the degree to which current spatial policies meet people's preferences and need for the use of peri-urban open spaces, the emphasis, in the case study cities' selection, was on dynamics and planning

policy systems. With regard to **dynamics**, the main interest was on cities that tend to experience peri-urban growth. According to analysis carried out by Loibl et al. (2010), both Ljubljana and Edinburgh experienced peri-urban growth between 2000 and 2004. With regard to **planning policy systems**, the focus, in this thesis, was on selecting case studies with different spatial strategy (e.g. green belt, green wedges, green heart, etc.) in order to assess the effectiveness of considered spatial strategy with regard to peri-urban open spaces' use and accessibility. Ljubljana and Edinburgh have different spatial strategies (Ljubljana green wedges, Edinburgh green belt), however, according to findings from Loibl et al. (2010), in both cases, the city core is surrounded by a peri-urban area (Figure 2.4).

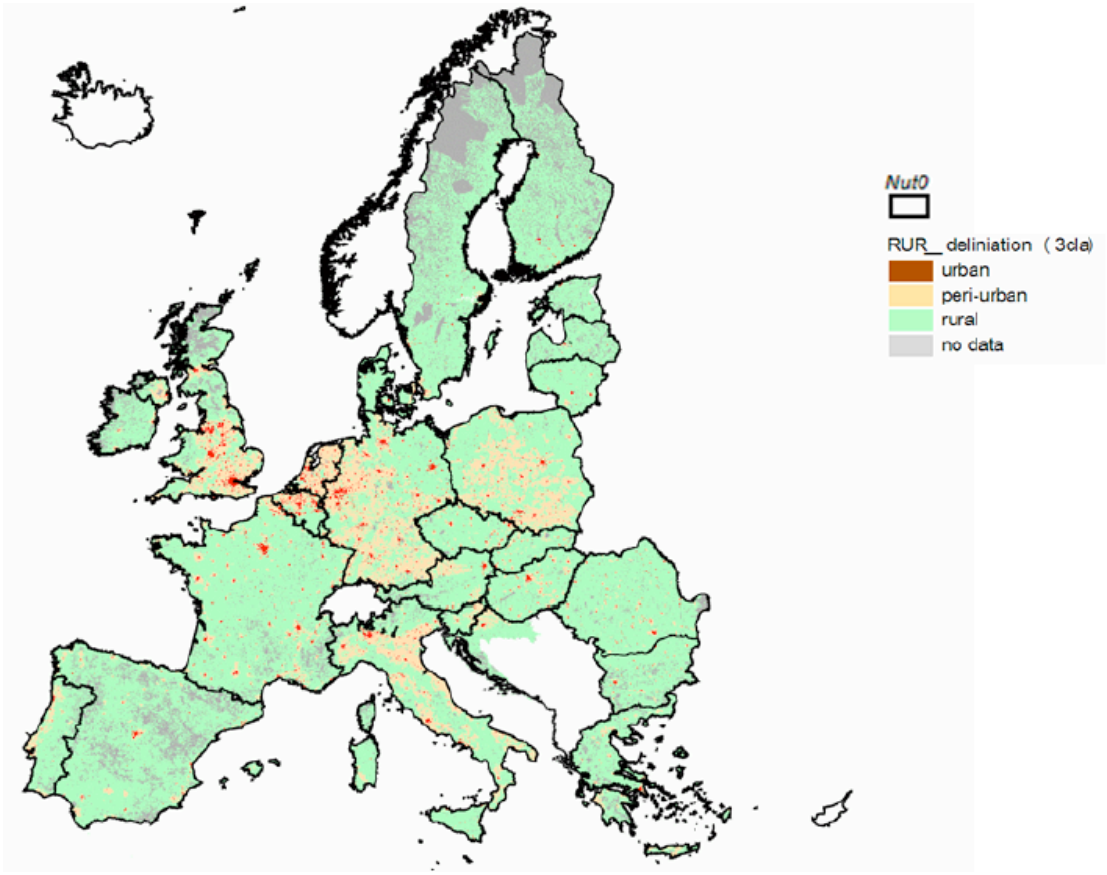


Figure 2.4: Simplified RUR sub-region delineation into urban-, peri-urban and rural sub-regions (Loibl et al., 2010, p.9, illus., Fig. 2).

Table 2.3 summarises the main characteristics of both selected cities, according to RUR typology criteria.

		Ljubljana	Edinburgh
RUR morphology type		Monocentric	Monocentric
Shape	**Fractal dimension**	High	Medium
	Jaggedness degree of urban settlement areas within the conurbations	Medium	Low
Dynamics		Growth of peri-urban area and rural hinterland	Growth of peri-urban area and rural hinterland
Planning policy systems		Green wedges	Green belt

Table 2.3: RUR typology characteristics for the two cities selected in this research as the case studies (for a detailed overview, see Loibl et al. (2010)).

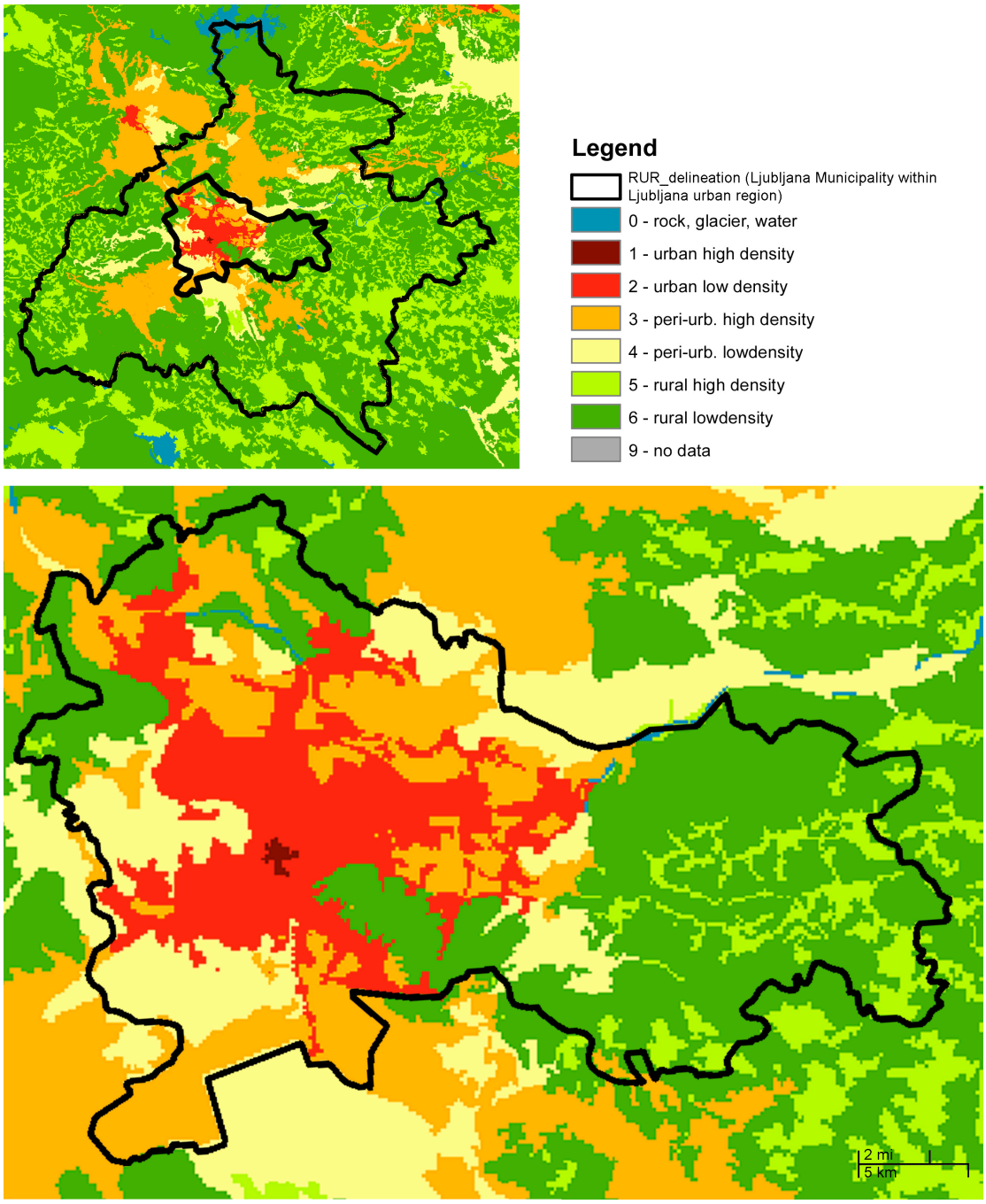


Figure 2.5: Final result of the sub-regional delineation covering the Ljubljana case study area (Source: Author's own extraction from Loibl et al. (2010)).

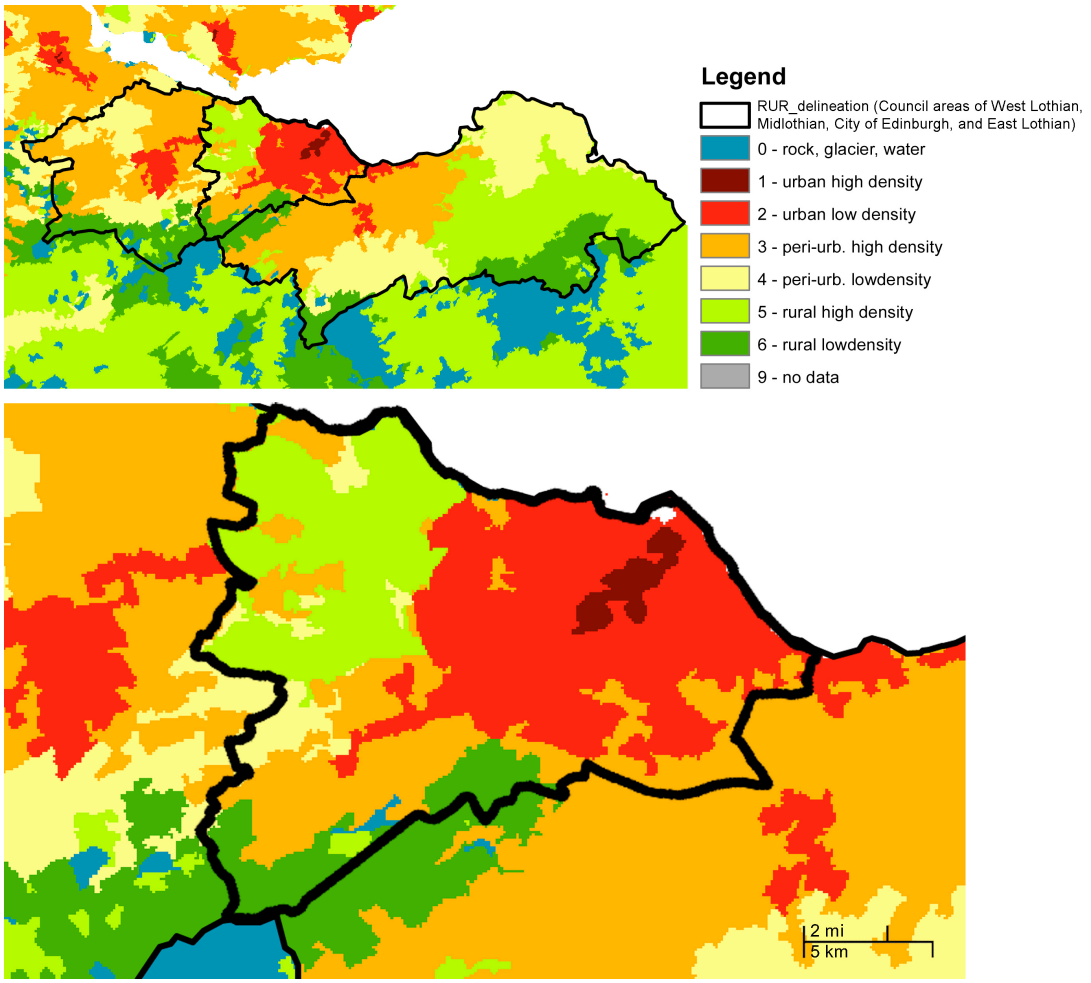


Figure 2.6: Final result of the sub-regional delineation covering the Edinburgh case study area (Source: Author's own extraction from Loibl et al. (2010)).

2.2 Description of the case study areas

With regard to the PLUREL typology described in Section 2.1.2.2, the intention of this research was to explore cities whose essential RUR morphology was the same (monocentric) and which both were experiencing a growth of peri-urban areas and rural hinterland, but where their characteristics with regard to the shape and planning policy systems differed. This would give way to understanding of how urban settlement patterns and policies towards green space systems might influence use of peri-urban open space. Ljubljana and Edinburgh are two cities that allowed the researcher to undertake a good comparison of the phenomena that occur there, as can be seen in Table 2.3. Both cities are profoundly decribed in the next sections.

2.2.1 Case study of Ljubljana

2.2.1.1 Historical city development

The city of Ljubljana has evolved on the junction of two reefs: Golovec with the Castle hill on the south-east and Toško čelo with Rožnik on the north-west. The fertile soil of marshes in Ljubljana provided suitable living conditions for its first inhabitants, around 2000 BC. Subsequently, Ljubljana was occupied by Romans (around 50 BC), who marked the city with one of the main traffic arteries from Aquileia through Emona (as Ljubljana was called during this time) to Celeia. The Roman period resulted in a noticeable development of civilisation, and during this time Emona counted 5000-6000 inhabitants.

During the Middle Ages, Ljubljana was a victim of numerous invasions and the dramatic development of the city only started in the 13th century, when Ljubljana (named Laibach in that time) was composed of three districts: the Old Square, the Town Square and the New Square. Each of them was surrounded by wall. In 1278, the town became a hereditary possession of the House of the Habsburgs. The privileges of this dynasty attracted merchants and craftsmen from all over Europe. In the 16th century, the population numbered 5000; and the baroque marked the city with the rebuilding of houses, the renovation of facades, interiors and decoration of the courtyards (Ljubljana, n.d.).

The appearance of the city changed dramatically in the first half of the 19th century, with the regulation of the river Ljubljanica and the construction of new bridges. In 1849, the railway linking the capital Vienna with its port Trieste, reached Ljubljana, and enhanced the industrialisation of the town. Around this time, Ljubljana's population was counted at 22,593 inhabitants. In 1895, the town experienced a catastrophic earthquake, but was largely restored by the Austrian and Czech architects, mainly in the Art Nouveau style. After the earthquake, Camillo Sitte and Max Fabiani developed the first comprehensive urban development plan which envisaged city growth, land use structure, transport corridors and morphological forms (Pichler-Milanović, 2003a).

At the turn of the century, Ljubljana benefited from a new water system, electricity, a modern sewage system, and public transport (tramway). The First World War affected the city only from afar and, following the dissolution of Austria-Hungary, Ljubljana became the cultural centre of Slovenia in the Kingdom of the Serbs, Croats and Slovenes.

In the inter-war period, Ljubljana counted more than 80,000 inhabitants. Between the 1920s and the 1950s the image of the city centre was (re)developed by the architect Jože Plečnik. Ljubljana became the centre of art, culture and trade in the Kingdom of Yugoslavia and grew rapidly, reaching a population of 90,000 in 1940. To the north of the city, new settlements were built in the modern, functionalist view. The first wave of (planned) suburbanisation started in late 1920s and 1930s with the establishment of typical one or two family houses 2-5 km away from the city centre along main transport roads.

During the Second World War, the city was occupied firstly by the Italian and subsequently by the German army. In order to break the strong resistance movement, the occupation forces surrounded the city in 1942 with 30 km of barbed wire, which traced the path still evident today. After the war, Ljubljana became the capital of Slovenia, one of the six republics of socialist Yugoslavia. It was a time of post war reconstruction, rapid economic growth and infrastructural development which attracted many new residents and led to the city's expansion. In 1958, a significant amount of land around the city was nationalised, which led to the intensive development in the inner-city of Ljubljana (Pichler-Milanović, 2003a).

Before 1990, land-use development of Ljubljana was mainly influenced by the Master Plan (1966). Between 1955-1995 built-up areas in the urban region of Ljubljana was enlarged more than three times. Until 1985 the land use and morphological pattern of Ljubljana was influenced by physical growth of the built-up area at the city periphery ('greenfield' development) and densification of some existing inner-city areas i.e. construction of multi-dwelling buildings, housing and industrial estates. After 1985, and most notably after 1991, city development has

been characterised with the revitalisation of inner-city areas primarily through: 'in-fill' development or transformation (demolition/reconstruction) of existing areas ('brownfield' development) into new (up-market) housing, shopping centres, etc. replacing former military and industrial sites or warehouses. The other significant land use development in Ljubljana (agglomeration) has been the growth of suburbs in the existing city neighbourhoods or settlements/villages at the city periphery and in surrounding municipalities in urban region.

In the years 1970-1990 the concept of polycentric development was integrated within the country's policies. This concept was founded on the principle of 'equal distribution' of industry and services ('central place theory') (Pichler-Milanović, 2003a). Therefore, in the 1960s and 1970s, the inner-city of Ljubljana, and especially surrounding settlements, experienced the growth of residential and industrial areas. Self-built 'illegal and semi-legal' construction of private family houses represents the greatest deviation from the former spatial development plans (1966; 1986) (Ljubljana – Slovenia, n.d.). The construction took place mainly on greenfield at the inner-city periphery (planned (sub) urbanisation) and with urbanisation of settlements near the built up city area and on the main transport corridors near the employment centres (Pichler-Milanović, 2002). The process continued through the 1970s and 1980s, with (unplanned) suburbanisation within the southern edge of the city and construction of detached houses in the surrounding communes of Vrhnika, Grosuplje, Domžale, Škofja Loka and Kranj (Pichler-Milanović, 2003a).

In 1991, Ljubljana became the capital city of an independent state of Slovenia. The independence and democratic and economic reforms had important effects on the administrative, morphological and functional transformation of the inter- and intra-city of Ljubljana. In the early 1990s, urban planning was neglected because of the priorities of macro-economic reforms. Therefore, new spatial development in the city was reflected in dispersed or scattered residential sprawl (Pichler-Milanović, 2003a). However, in 1990s the urban sprawl of retailing was larger; the construction of large hypermarkets on the inner-edge of the city has had a negative effect on the city centre of Ljubljana.

In late 1994 local government reforms in Slovenia administratively and spatially transformed the capital city. The official city territory was reduced to 272 km2 whilst Ljubljana agglomeration (map of Ljubljana agglomeration) was transformed into the Ljubljana City Municipality and eight surrounding municipalities. The Ljubljana Urban Region, as NUTS3 (or statistical) region, was established in 2000. It comprises 24 municipalities and covers a land area of 2555 km2 (Ljubljana – Slovenia, n.d.). Today, the city's population stands at 276,000 inhabitants, which ranks it among one of the medium-sized European cities.

Administrative and functional area of Ljubljana	**Area** (Sq.km)	**Population** (1991)	**Density** (Pop/sq.km)	**Annual population change (%)** *1971-61*	*1981-71*	*1991-81*	*1998-91*
City Municipality	272	272650	1002	2.86	1.90	0.41	-0.08
Urban agglomeration	903	321607	356	2.44	1.84	0.54	0.09
Functional Urban Region (FUR)	1733	413402	238	2.10	1.86	0.67	0.26
Metropolitan region	4823	607949	126	1.63	1.58	0.66	0.47
Central Slovenian Region	3546	514883	145	1.75	1.68	0.68	0.27

Administrative city: *Ljubljana City Municipality* (>1994); *Ljubljana Agglomeration* (five communes < 1994);
Function urban area: *Functional Urban Region (FUR)*: Ljubljana agglomeration (five communes) and surrounding communes (<1994) of Domžale, Grosuplje, Vrhnika; *Metropolitan region*: Ljubljana FUR and communes (<1994) of Cerknica, Kamnik, Kočevje, Kranj, Litija, Logatec, Ribnica and Škofja Loka.
Central Slovenian (statistical) **Region:** Ljubljana FUR and communes (1994) of Kamnik, Litija, Logatec, Kočevje, Ribnica.

Figure 2.7: Represented characteristics of the city of Ljubljana and (urban) regions (Pichler-Milanović, 2002, illus., Table 2).

Settlement types in Ljubljana FUR*	***Population*** **1961**	**1991**	**2000**	***Absolute change*** **2000/61**	**2000/91**	***Change (%)*** **2000/61**	**2000/91**
Urban areas**	181661	300267	292355	110694	-7912	161	97
Suburbs	36675	62386	67159	30484	4773	183	108
Urbanised areas	27431	36767	40745	13314	3978	149	111
Other industrialised settlements	23751	36878	38505	14754	1627	162	104
Rural areas	71265	65502	73257	1992	7755	103	112
Total	**340783**	**501800**	**512021**	**171238**	**10221**	**150**	**102**

*FUR of Ljubljana occupies approx. 900 sq.km with 270 settlements in the circle of 25 km and accessibility of 30 min from the city centre.
**officially defined urban settlements (towns) of Ljubljana, Vrhnika, Grosuplje, Domžale, Mengeš, Kamnik, Litija
Source: Statistical Office of the Republic of Slovenia; Ravbar, 2002, 1997.

Figure 2.8: Represented changes in the numbers of inhabitants according to settlement types between 1961-2000 in the (functional) urban region (FUR) of Ljubljana (Pichler-Milanović, 2003a, illus., Table 13).

The following facts, quoted from (Dimitrovska-Andrews, 1998, in Pichler-Milanović, 2003a), summarise the notable changes in land use and morphological structure of Ljubljana which have taken place after the Second World War until Slovenian independence:

- Physical urban growth on the inner-city periphery ('greenfield' development) from 1960-1985;
- Increased density of development in existing built-up areas, especially before 1965 and, after 1985;
- Urban growth of the inner-city areas through 'in-fill' development and transformation (demolition and reconstruction) of existing land use ('brownfield' development) i.e. new housing estates and shopping centres replacing military barracks, industrial areas and warehouses after 1985; and most extensively after 1991;
- Urban growth by 'satellite' extension of new suburbs in existing city neighbourhoods and settlements (villages) at the city periphery; or in surrounding municipalities of Vrhnika, Domžale and Grosuplje from 1985; and most extensively after 1991.

2.2.1.2 Land use change from the 1990s until the present day

The morphological form of Ljubljana is 'star-shaped' which indicates that main transport and infrastructure corridors were the incentive for urban development through history (Pichler-Milanović, 2003a).

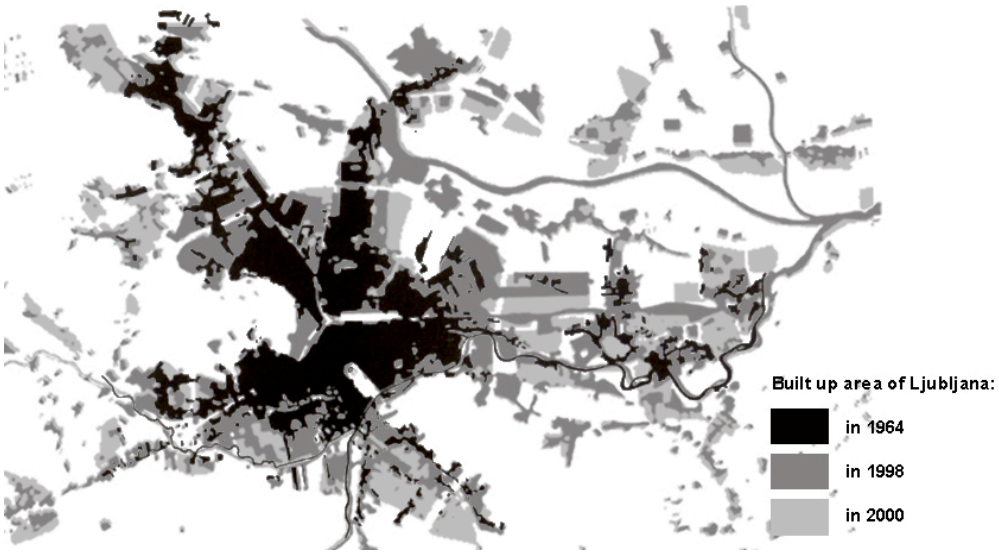


Figure 2.9: Development of the urban structure of Ljubljana (Urban development of Ljubljana, City Museum of Ljubljana, 1997, in Pichler-Milanović, 2003a).

The neglect of urban planning in the early 1990s led to the expansion of urban sprawl in the form of large shopping centres (see Figure 2.10), hypermarkets or specialised stores (outlets). Additionally free parking lots and leisure activities (i.e. multiplex cinemas, cafes, restaurants, fitness centres and specialised shops, etc.) have enhanced the flourishing of these structures which have mainly occupied a space on urban edge, formerly intended for industrial development, or on greenfield sites (Pichler-Milanović, 2003a).

Figure 2.10: In Ljubljana, four major shopping centres were built at the edge of the inner-city near the intersections of the ring road (Source: Author's own, adapted from Pichler-Milanović, 2003a):

1. – BTC occupies 50,000 sq.m. It is located at the north-east periphery of the inner-city; and it is the largest shopping and recreational area.

2. – Rudnik is the second largest commercial area. It was constructed in 1999 on unused industrial land in the south-eastern part of the inner-city of Ljubljana.

3. – Since 1997, a smaller hypermarket (Interspar Vič) has been located within the eastern part of the inner-city on former industrial premises (Vič).

4. – Since 2000, Mercator hypermarket has been located on unused industrial premises in the northern part (Šiška) of the inner-city periphery of Ljubljana.

In the late 1990s, shopping centres continued to sprawl, conjointly with housing, transport and communal infrastructure, primarily on city-edge greenfield and arable land (Pichler-Milanović, 2005). Consequently, Ljubljana's urban (sprawled) development can be described as a mix of 'continuous built-up areas', 'dispersed sprawl' and 'leap-frogging' houses (Pichler-Milanović, 2005).

Ljubljana urban region (LUR)

% land use patterns in 2001 according to 1997	Forests	Arable land, pastures and other green areas	Other: open land areas (rocks, land not in use, deponies, quarry)	**Built-up land**	Transport (roads, rail, airports)	Water	% of total land area 1997	Total land area 1997 (ha)
Forests	91,5	13,7	18,0	0,4	0,8	0,0	61,5	156513,9
Arable land, pastures and other green areas	8,4	86,2	34,7	2,7	2,2	0,0	32,2	82119,5
Other: open land areas (rocks, land not in use, deponies, quarry)	0,1	0,1	47,3	0,0	1,0	0,0	0,5	1263,5
Built-up land	**0,0**	**0,0**	**0,0**	**96,9**	**0,6**	**0,0**	**4,3**	**10823,2**
Transport (roads, rail, airports)	0,0	0,0	0,0	0,0	95,4	0,0	1,2	3095,8
Water	0,0	0,0	0,0	0,0	0,0	100,0	0,3	841,7
% of total land area 2001	62,4	30,8	0,9	4,4	1,3	0,3	100,0	
Total land area 2001 (ha)	158853,3	78365,3	2201,0	11150,0	3246,3	841,6		254657,5

Figure 2.11: Land use changes between different land use patterns in the urban region of Ljubljana (LUR) 1997-2001 (Pichler-Milanović, 2005, illus., Table 2.2).

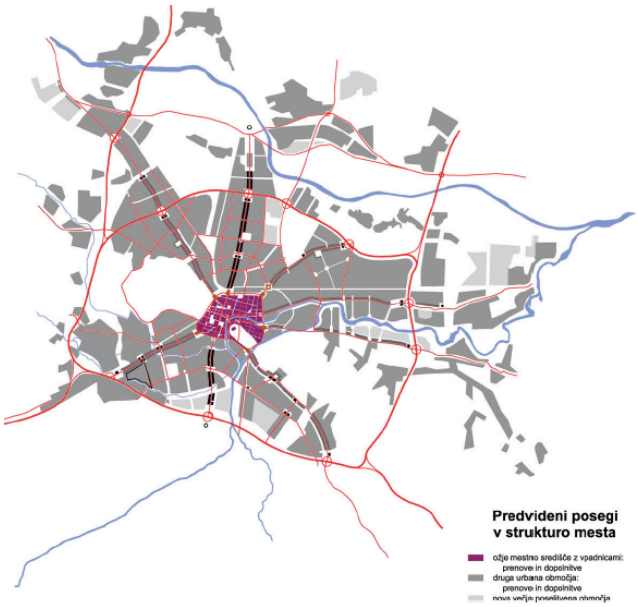


Figure 2.12: The light grey colour indicates new larger housing areas, as planned in the new Municipal Spatial Plan (OPN) of Ljubljana (MOL, 2010, p.11398, illus., Slika 7).

2.2.1.3 Infrastructure and transportation network development

Ljubljana is situated at the intersection of important transport routes from northern and western Europe to the Mediterranean, Balkans and the Middle East. With large investments in transportation infrastructure since the 1990s, its development has rapidly grown, and in 2010 resulted in the completion of a national motorway network, connecting the west-east corridor (E5) and north-south corridor (E10). In addition, local and regional roads with good connections to the motorways have also benefited from these improvements (Pichler-Milanović, 2003a).

A combination of several parameters (e.g. low-interest loans for car purchasing; a dispersed settlement network; ineffectiveness of public transportation; good quality of local and regional roads; accessibility by car; high property prices in Ljubljana and suburbanisation, etc.) have all contributed towards an increase in car ownership i.e. from 320 cars/1000 inhabitants (1989) to 480 cars/1000 inhabitants (2000). Public transport in Ljubljana consists of buses whilst the suburban railway system is not well developed. Consequently, more than 65% of commuters use private cars for daily commuting to Ljubljana. The number of passengers using public transport decreased from 135 million (1990) to 100 million (2000). The railway connections are only of local and regional importance for flows of passengers and mainly for freight (Pichler-Milanović, 2003a).

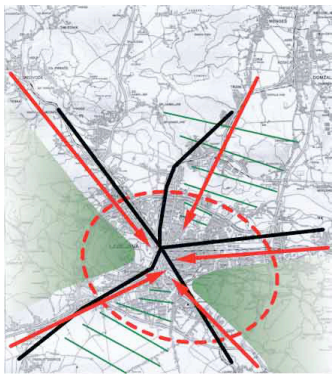


Figure 2.13: Indication of major development forces in Ljubljana: roads, morphology (two hills) and railway (Source: Author's own).

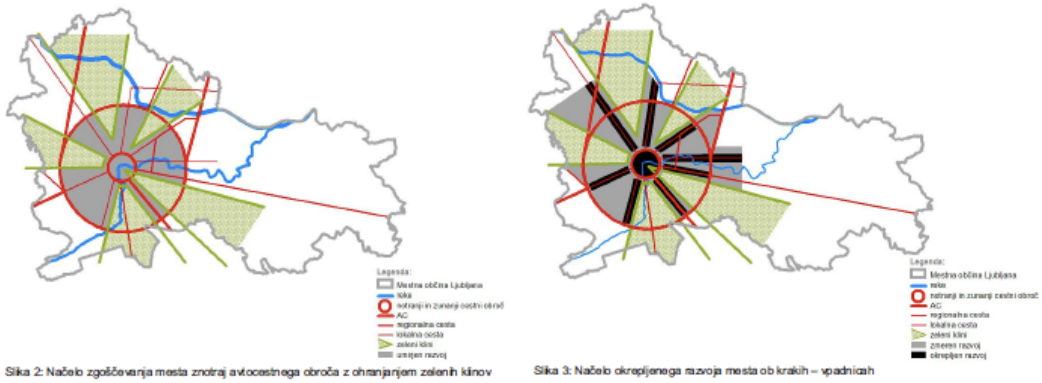


Figure 2.14: The spatial development of Ljubljana, according to the new Municipal Spatial Plan (OPN) (MOL, 2010, p.11387, illus., Slika 2 & Slika 3) is based on the preservation of the concentric model of the city centre and a combination of the radio-centric and 'star-shape' models in the compact inner-city (within the

motorway ring road). For instance, the continuation of compact development within the urban centre has emphasised development along the radial roads and maintenance of green wedges in-between. Furthermore, the plan is aimed at the connection of the suburban areas with public transport, densification of population density along public transport stops, preservation of green caesura in-between and the promotion of mixed use development.

Besides daily commuting, Ljubljana is also known for its weekly commuting. The main reasons associated with this are: the small size and high accessibility of the country; inheritance of land and/or old family homes in rural areas during rapid industrialisation; and the desired lifestyle pattern of a detached house 'with a big garden at the edge of the forest' (Pichler-Milanović, 2003a). According to Pichler-Milanović (2003a), "sociological surveys, conducted in the past ten years are showing that most respondents:

- Support the construction of motorways as they use the car in everyday life to go to work, schools, shopping, and they are prepared to daily commute between 30-60 min in one way;
- Would prefer to live in rural areas in smaller settlements whilst only a few percent would chose to live in the centre of a town with more than 50,000 inhabitants;
- Do not think to move to other towns or residential areas, and if so than to an individual house with a garden."

Type of area	Net migration s (1994–1998)	Net migrations (1982–1998)	Number of migrations/100 inhabitants
Urban areas*	– 6207	– 8570	57,6
Suburbs	+ 1930	+ 6963	76,6
Urbanised settlements	+ 1307	+ 3895	63,6
Industrialised settlements	+ 381	+ 1380	64,3
Rural settlements	+ 3473	+ 5743	63,3
TOTAL	**+ 884**	**+ 9411**	**61,9**

**officially defined urban settlements (towns) of Ljubljana, Vrhnika, Grosuplje, Domžale, Mengeš, Kamnik, Litija

Source: SORS; Ravbar, 2002.

Figure 2.15: Residential mobility of the population between 1982-1998 according to types of settlement in FUR of Ljubljana (Pichler-Milanović, 2003a, illus., Table 13).

2.2.1.4 Urban planning in Ljubljana from the 1990s until present

After the Second World War – during the socialist period – several measures were implemented in the urban planning regulation, such as nationalisation of urban land and housing, preservation of agricultural land and control over land in public ownership, etc. (Pichler-Milanović, 2003a). The development of Ljubljana was formally regulated with the Master Plan (1966) and a long-term planning document called 'Ljubljana 2000', which was approved in 1986 and revised in 1995, in order to promote densification and renewal of built-up areas. These regulations however, failed to prevent unplanned development of family houses at the edges of the city (Pichler-Milanović, 2003a).

As previously mentioned, many projects in the early 1990s were not developed according to spatial development strategies but according to the needs and demands of the market economy and new public and private investors (Pichler-Milanović, 2003a). On the basis of the assumption that the city will continue to expand in the future, urban planners and architects have produced many analyses and programs, in order to regulate, control and direct the spatial development of the city. Furthermore, landscape planners and architects have been searching for answers for which green open spaces should remain not built in the future (e.g. Marušič, 1992), with the awareness for the importance of the green open spaces for human well-being. However, the comprehensive strategic development plan for the city of Ljubljana, under the paradigm of sustainable development, was only adopted in 2002. The main goal of the plan was the improvement of the city's competitive strengths, sustainability and quality of life until 2020 (Pichler-Milanović, 2003a).

In the year 2010, the city of Ljubljana adopted the new Municipal Spatial Plan (OPN) (MOL, 2010). It consisted of two parts: strategic policies and spatial development plan. The decision-making process of the plan preparation involved many experts, city authorities and public participations.

The Municipal Spatial Plan pointed out the spatial problems of Ljubljana's development. Some of the problems of spatial development in Ljubljana, which are

considered to be relevant for this study, are listed below (MOL, 2010; Pichler-Milanović, 2003b):

- Inadequate organisation and poor maintenance of public open and green spaces: deterioration of landscapes (peri-urban landscape is cluttered and chaotic compound of car shops, chinese restaurants, shopping centres, businesses, gas stations and jumbo-posters, etc.);
- Negative phenomena of suburbanisation;
- Loss of local and national identity of settlements due to the new (sprawled) development that often ignores natural forces as well as traditional settlement characteristics;
- Transport problems: inadequate regulation and poor accessibility, inefficiency of public transport, disorganisation of parking, unresolved problem of the railways, disconnected cycling network and poor connection between the main development branches, etc.;
- Unplanned development of garden allotments;
- Privatisation of open space;
- Spreading of illegal waste dumps.

The main aim of the plan is to provide a vision and strategy for the development of the Ljubljana Municipality for the next fifteen to twenty years. This will allow balanced spatial development of the municipality. The goals are (MOL, 2010):

- To renew and upgrade already urbanised areas;
- To curb and renovate urban sprawl and otherwise inappropriately used areas;
- To complement the social and economic public infrastructure;
- To rationally plan the construction of new settlements, where needed, for the development of the Ljubljana Municipality;
- To promote sustainable land use so that in terms of any new spatial arrangements and renovation of existing urban areas, the principles of rational land use, energy efficiency, promotion of public transport use and preservation of green space will be followed.

2.2.1.5 The peri-urban landscape in Ljubljana

According to Pichler-Milanović, (2003a, p.54), at the end of 1980s, Ljubljana had more than 25 m2 of (public) green spaces per inhabitant. Despite the quantity, their accessibility, structure and quality were unsatisfactory (Simoneti, 1992). In the radius of 500 m, only ca. 65% of inhabitants have had easy access to some kind of green open space (Pichler-Milanović, 2003a).6 Outlined below is a summary of good and negative aspects associated with the green areas in Ljubljana.

According to Pichler-Milanović (2003a) and UIRS (2001), the good characteristics associated with the green areas in Ljubljana are:

- Preservation of forests at the edge of the inner city and near the city centre;
- Rivers;
- Open greenfields;
- Little derelict land;
- Consideration of the aspects of nature in the city;
- Integration with the hinterland;
- Even distribution and accessibility for all.

According to Pichler-Milanović (2003a) and UIRS (2001), the negative aspects associated with the green areas in Ljubljana are:

- City parks are not well maintained;
- Lack of more landscaped and pedestrian lanes;
- Issues of land ownership;
- Land use often overlaps;
- Insufficient activation of space;
- Sealing of open space.

[6] Green space quality and size are not reported.

The ‘star-shape’ development of the city has enabled preservation of relatively extensive natural, especially forest areas. The most important areas are (MOL, 2010, p.11392):

- Landscape parks: Zajčja dobrava, Polhograjski Dolomiti, Tivoli, Rožnik and Šišenski hrib with the natural reserve in Mali Rožnik and Mostec, and Ljubljana Marsh;
- Ecologically important areas: Šmarna gora, Sava river from Medvode to Kresnice, Rakovnik, Vevče and Rašica-Dobeno-Gobavica, and Golovec;
- Other protected areas (areas of cultural monuments and cultural heritage), areas of natural values and areas under Natura 2000 protection.

The basic elements of Ljubljana’s morphological structure are: the characteristic areas, connecting structures and extensive landscape structures (MOL, 2010, p.11397). The last are the most relevant for this study. Extensive landscape structures comprise of: landscape parks and cultural landscape, where landscape structure and important components of nature and cultural heritage need to be protected. These areas are: Castle Hill within Golovec and the green hinterland of Janče and Orle, Rožnik and Šišenski hrib in connection with Polhograjski Dolomiti and Ljubljana Marsh. In these areas ecologically important sites must be protected; the recreational character of forest areas should be preserved; new activities’ diversity should be promoted; and accessibility should be improved and construction restricted.

Figure 2.16: The concept of the green open space network (MOL, 2010, p.11399; illus., Slika 8).

2.2.1.6 The legal position regarding access in Slovenia

Slovenia became independent country in 1991, when its ownership structure changed. Due to the denationalisation process, the privately owned area has increased mostly in form of small holdings and fragmented ownership. Today, for example, 75% of the total forest area (which covers approximately 60% of the country) is privately owned, of which 40% of holdings have an area of less than 6 ha. These characteristics represent a challenge in economic (i.e. cost-effective and cost-competititve) management of the land (Schmithüsen and Hirsch, 2010). However, the independency has not brought any particular changes with regard to public rights to access.

In Slovenia, the public has in general right to access particular public or privately owned land for recreational and leisure purposes (a so-called 'freedom to roam'), that has been practised for a long time and it has never been prohibited by any legal document. Access to natural and cultural landscapes, both publicly and privately owned, is permitted to everyone for a variety of activities including berry- and mushroom picking although certain restrictions apply.

In a formal sense, most new legislation was adopted following the political changes of the early 1990s. Since then, the right to access in Slovenia is regulated and precisely defined thorough sector laws. The Act on Forests (Slovenija, 1993) guarantees free public access to forests in Section 5: " […] The owner of a forest must therefore: allow free access to and movement of the forest to others; allow beekeeping, hunting and the recreational gathering of fruits, herbal plants, mushrooms and wild animals in accordance with regulations." The same applies also to uncultivated agricultural land (Slovenija, 1996, Article 5). However, forest owners are entitled to restrict access to the forest and forest parts, respectively, for specific reasons, such as: regeneration, wildlife protection and general protection of forest ecosystems (Slovenija, 1993, Sections 24 and 25). Forest roads are allowed to be used by the general public but the users are responsible for any damage that they may cause (Slovenija, 1993, Section 39). With regard to the form of access, the Act on Forests from 1993 does not specify it, however, in the new Act on Amendments

and Supplements to the Act on Forests, an additional point was added: "Free access means free walking in a forest" (Slovenija, 2007b, Section 4, translated by the author).

Free access is also given for the use of designated mountain paths for walking, jogging and hiking, respectively (Slovenija, 2007a, Section 3) as long as no damage is caused to property or harm to wildlife and other users. With regard to the form of access, the Mountain Paths Act in Section 19, forbids the use of mountain bikes, motorcycles and other vehicles as well as horseback riding on designated mountain paths, apart from the field paths and forest roads (Slovenija, 2007a).

The public has also free access to all bodies of water that are designated for public use (e.g. drinking, bathing, diving, skating or any type of personal use if such does not require the construction of a facility (Strle, 2012, Article 105). Accordingly, owners of water, waterside or other land must permit passing across their land to a water or marine asset and are not allowed to create barriers on waterside or water land that would prevent free access to any water asset (Strle, 2012, Article 200).

2.2.2 Case study of Edinburgh

2.2.2.1 Historical city development

There is some uncertainty about the early history of Edinburgh. According to some sources, the earliest traces of human settlement in the Edinburgh region date back to around 5000 BC (McMillan and Hyslop, 2008), however, according to some other sources, the first human habitation was at Cramond around 8500 BC (British Archeology, 2001). More solid evidence, of stone settlements which emerged during the Iron and Bronze ages, has been found around the Pentland Hills, on the Castle Rock, Arthur's Seat and on Craiglockhart Hill (Coghill, 2008). At around the 1st century AD, the area was part of the Kingdom of Northumbria, under the rule of King Edwin. The area was called 'Din Eidyn' ('Edwin's Fort'). This term later transformed into 'Edwinesburch' and subsequently became 'Edinburgh' (Flanagan,

2010). At that time, the Edinburgh area was probably a hillfort. It is speculated that it was set on the Castle Rock, however, its exact location is not known.

Until the 12th century AD, the Edinburgh area was ruled by different nations: whilst at the time of the Kingdom of Northumbria, it was predominantly under English influence, in the late 9th century AD, Vikings cut off the northern part of Northumbria, which weakened the kingdom. During the 10th century AD, this part, known under the name Lothian, came under the rule of the Kingdom of Scotland and after that, albeit regular disturbances, Edinburgh remained under the Scots' authority (Coghill, 2008).

By the 12th century, Edinburgh was an established settlement which stretched from the Castle Rock with development of the Old Town and High Street down the ridge from the Castle to Holyrood on the east side. Development on the ridge, the craggy protection of the Castle Rock on its west and the Nor' Loch (the loch to the north of the Castle) provided the city with a very fortified position (crag-and-tail) (McMillan and Hyslop, 2008). From that time originates the oldest surviving building, the stone-built St. Margaret's Chapel within Edinburgh Castle on the Castle Rock. This was the time when Leith also started to expand, since its port served as a major wool route after Scotland's previous main trading port, Berwick, fell under English occupation. In the early 17th century, Edinburgh was the capital city of an independent nation-state and also a major trading port (Parlett et al., 1995). Traders such as shoemakers, hatmakers, leather workers, tailors, candlemakers, smiths, etc. served the needs of the royal court and nobility. The city was also a centre for educational and professional development especially after the University of Edinburgh and the Bank of Scotland were founded in the 17th century.

Despite some devastating plague outbreaks (mostly in the 16th and 17th centuries), which resulted in high death rates, Edinburgh continued to grow. Yet, Edinburgh remained a walled town, with an area of only around 1 square mile, until 1763 (Stubbs, 2012). The development was restricted to the High Street ridge, since the town was restrained with lochs to the north and south. The rich lived on the upper

and middle floors of high-rise buildings, whilst the poor lived on the lower floors, often in inhumane conditions.

The growth of the population forced the citizens and their political leaders to plan the expansion of the town beyond its walls. This took place to the south, since, to the north, the Nor' Loch presented a barrier to development. In 1751, the Town Council published "Proposals for carrying on certain public works in the City of Edinburgh", a document which proposed the development of a New Town to the north, which would be connected to the Old Town by a bridge. The Nor' Loch was drained and converted into Princes Street Gardens in later years and, in 1772, the North Bridge became fully operational (McMillan and Hyslop, 2008).

A competition to produce a plan for Edinburgh's New Town was won by James Craig who designed it as a symmetrical grid layout. It consisted of a formal arrangement of straight streets, squares and crescents. Town houses were constructed of sandstone from nearby Craigleith quarries. The New Town was first developed between Charlotte and St. Andrew Squares, with Princes Street running from west to east. Due to its success, a demand for further expansion encouraged the development of similar schemes between 1800 and 1830 (McMillan and Hyslop, 2008). Although most of the New Town's development was for wealthy families, there were different types of accommodation planned, to provide residences also for servants and tradesmen. All in all, Edinburgh's New Town today represents the most characteristic mark of Georgian Edinburgh (Knox, 1984).

By the beginning of the 19th century, the city experienced development on all sides: the New Town's extensions reached to the north, east and west. On this occasion, terraces and squares were replaced by crescents. These later extensions, however, have been criticized for lacking the elegant style, representative of the Georgian New Town's first building phase (Knox, 1984). The Old Town continued to develop to the south. By 1891, the population reached 261,000, with many of its citizens living in Victorian tenements. The imprint of their building style has remained to the present day.

From the 18th to 19th century, Edinburgh experienced changes not only in spatial development but also it evolved into an international centre of philosophy, history, music, science, economics and medicine which attracted names such as David Hume, Adam Smith, James Hutton, John Playfair, etc. At that time, Edinburgh earned the title the 'Athens of the North', due to the neoclassical architecture of the New Town's public buildings, monuments and statuary. Some of these were, for example, the Assembly Rooms, the High School, the National Monument, Register House and the Royal Exchange (today's City Chambers) (Knox, 1984).

The 19th century was a time when industrialisation was spreading across Britain and it also reached Edinburgh, such that it was renamed 'Auld Reekie' due to the smoke from the steam engines and pollution. However, Glasgow soon overtook Edinburgh's industrial scale, whilst Edinburgh continued to develop its commercial, shopping and cultural potential. Between 1850 and 1914, almost 1,000 new civic, public and governmental buildings were built in the city, many of them on a monumental scale (Rodger, 2001). These were in juxtaposition to the Old Town's ancient wynds and closes. Moreover, Princes Street Gardens and the railway penetrating the city centre divided Edinburgh's city centre in two, with the Old Town on the south and the New Town on the north sides. The Old Town became a slum, overcrowded and socially segregated from the rest of the city. To solve the state of this area, major streets were improved under the City Improvement Act of 1867. Following this act, most of the Old Town was transformed into a Victorian Old Town, with two-thirds of the ancient buildings there demolished (Rodger, 2001). These improvements reduced the death rates but did not enable any cheap housing in the Old Town, and poor residents subsequently moved to other districts that soon became overcrowded slums. This process showed that inexpensive housing should be included in any future developments of the city (Smith, 1994).

Apart from the need for provision of inexpensive housing, two other factors played an important role in terms of where and when new housing development should take place. These two factors were the business strategy and topographical characteristics of the city (Rodger, 2001). The business strategy was reflected in industrial

decentralisation because central locations of the city had disadvantages, due to the city's physical limitations in terms of sites, traffic congestion and dependence on road freight over rail freight. With regard to topographical characteristics, gradients became important, for canal and railway engineers, to gain access to Edinburgh. Inexpensive housing, to accommodate the working class, took place along major transport axes. Accordingly, on the basis of all these factors, new working-class housing development was east-west oriented, whilst, generally speaking, middle-class housing development followed a north-south orientation, which was also the horse-drawn tramway route (Rodger, 2001). Thus, new developments were in Newington, the Grange, Merchiston and Morningside, all to the south, and across the Dean Bridge to the north at Learmonth. Social and spatial segregation, which was a factor acknowledged by planners in English cities, soon was recognised too as needing to be addressed in Edinburgh, although not to the same extent since, in central parts of Edinburgh, a complete re-accommodation of middle- and upper-middle-class appeared not to be very simple. The main reason for this was a substantial number of neo-classical apartments in the city centre which were also far from the main industrial and working-class districts.

With the urban-industrial transition of the 19th century, Edinburgh's population rapidly grew from 150,674 in 1821 to 413,008 in 1901 (Knox, 1984). The turn of the 19th century was marked by a considerable amount of housebuilding that used similar materials and applied architectural details which created developments that were architecturally coherent. Due to several factors, such as the cost of construction and the rental market, a standardised development plan was put in place. After 1860, the development of tenements was uniform to a four-storey equivalent of a medieval wall with windows (Rodger, 2001). In addition, the use of local sandstone which is, actually, "a common thread running through Edinburgh's history of development" (McMillan and Hyslop, 2008, p.3), has given the city a sense of place and has confirmed the uniqueness of its location (McMillan and Hyslop, 2008).

Individuality in construction was only possible for people who could afford to engage architects and builders to create and personalise buildings and it is reflected

in the expansion of semi-detached suburban villas built at the beginning of the 20th century in areas such as the Grange, Craigmillar Park, Merchiston and Colinton (Rodger, 2001). The decentralisation of the city continued, along with these private developments, also with public housing projects. With this territorial expansion, the city absorbed many nearby villages such as Portobello, Leith, Granton and Newhaven (Knox, 1984).

Between the two world wars, the population of the city began to settle and fall during the 1960s and, consequently, some less desirable tenement neighbourhoods in the inner-city areas have been de-populated. The first half of the 20th century was a time of economic stagnation, however, there were some partial improvements to the Old Town made by the pioneering town planner Patrick Geddes. His approach, 'conservative surgery', started with an observational technique and consideration of primary human needs to set the basis for smaller interventions, to improve living conditions, rather than 'sweeping clearances' of slum tenements (Rapoport, 1976). Despite Geddes' success in preserving some viable built structures, major slum clearances continued in the 1960s and 1970s, leaving, out of 292 houses in the Cowgate in 1920, only eight houses in 1980 (McKean, 1991). These measures were reflected in a significant redistribution of the population: whilst the inner-city areas have lost residents, new public and private housing schemes appeared on the outer fringes of the city. These were predominantly small suburban houses and later great housing estates. The tradition of building in stone was replaced by brick and later on by concrete for use in modern high-rise flats (Knox, 1984).

2.2.2.2 Contemporary city development and redevelopment of Edinburgh

Edinburgh today has a population of just under half a million inhabitants. The city experienced a loss of over 8% of its population between 1971 and 1981 such that its out-migrants have been mostly younger adults with dependent children. The same group is also recorded as having moved from the inner-city to peripheral areas, where most of the city's public housing is located. These areas, however, were recognised as having poor public and private amenities and services and were socially and economically disadvantaged. Nevertheless, Edinburgh, in comparison to

other Scottish cities, has not had as many 'multiply deprived' neighbourhoods or households (Knox, 1984).

In 1984, Edinburgh recorded around 53% of owner-occupied households. This component of the city's residential structure was, in the 1980s, growing the fastest, mostly on the fringe, on greenfield sites, where it used up good agricultural land (Knox, 1984). In order to constrain the extension of suburban development and accordingly, preserve nearby agricultural land, and to prevent a decentralisation of the population and employment, the city has taken several measures. Already in 1957, a green belt policy was introduced to constrain the extension of suburban development, protect agricultural land and to conserve the setting of the city. This policy proved to be effective in controlling urban sprawl although some, especially commercial, development appeared along main traffic routes to the west of the city. Examples are the South Gyle commercial centre and Edinburgh Park, a new business and technology park, located on the city's western fringe area, which was built to contribute to the city's economic regeneration.

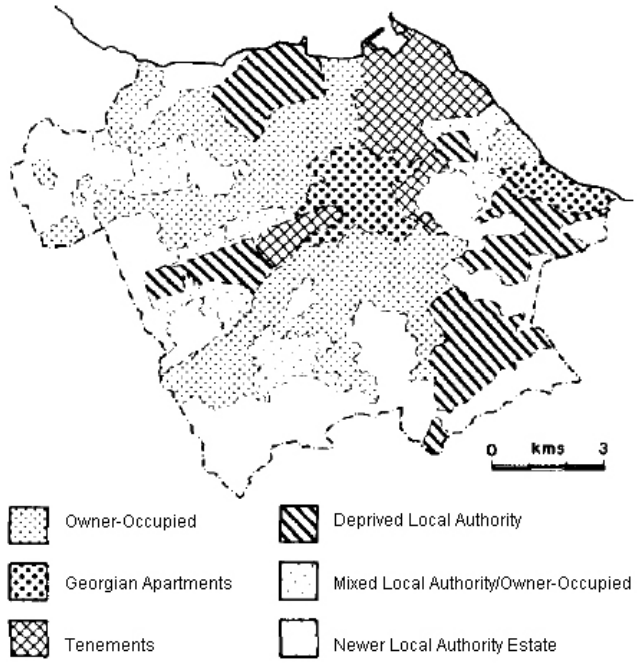


Figure 2.17: The distribution of residential areas in Edinburgh in 1984 (Knox, 1984, p.331, illus., Fig.2).

To prevent decentralisation of the population and employment, the focus of strategic planning has been to direct residential and industrial development to inner-city neighbourhoods (Knox, 1984). The city's approach to this task has been to make a better use of brownfield areas, located within the city, before extending to the greenfield sites. Larger redevelopments have been, for example, a new Edinburgh International Conference Centre, which is part of the new financial district of Edinburgh. Its construction started in the early 1990s on a former railway property to the west of the castle that reaches to the Fountainbridge area. Further commercial development has been diverted to more peripheral locations, i.e. to established suburban centres with sufficient vacant land and existing transport and infrastructural services (Knox, 1984).

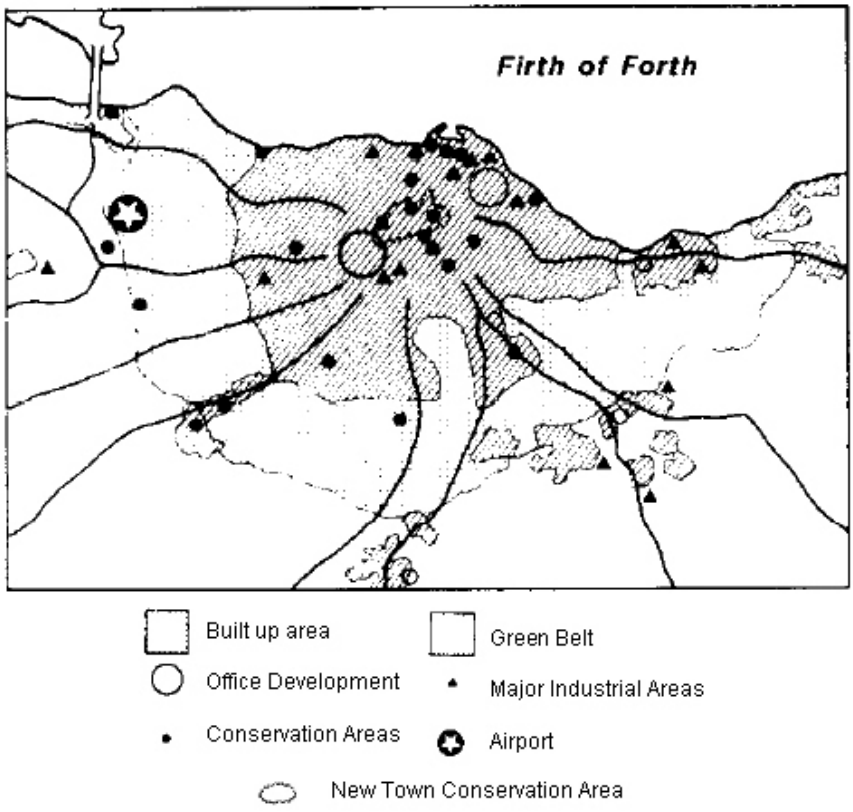


Figure 2.18: Components of strategic planning in Edinburgh in 1984 (Knox, 1984, p.332, illus., Fig.3).

With regard to redevelopment, the conservation of the city's historic fabric appears to be the most distinctive aspect of urban policy in Edinburgh but also the major issue (Knox, 1984). In 1995, the Old and New Towns (456 ha in total) were

recognised as a World Heritage Site for their outstanding architectural, historical and cultural importance. In addition, there are more than 6000 buildings which are officially designated as being of special architectural or historic interest. Whilst, on the one hand, the maintenance of these buildings in some parts of the inner city is often not economically cost-effective, on the other hand, in other parts of the city (e.g. the New Town) the pressures of commerce have been causing conflicts such as displacement of residential space, increased traffic and therefore a need for more parking space, changes in building facades, etc. (Knox, 1984).

To sum up, the highlighted changes, which have affected the spatial structure of Edinburgh, from the second half of 20th century until today, were:

- Edinburgh Green Belt designation in 1957 to prevent further expansion of the city and over-use of agricultural land;
- Rapid physical expansion of the built fabric of the city mainly through development of new peripheral areas and, subsequently, out-migration of predominantly young families to the peripheral parts of the city, in the 1970s and 1980s;
- Redevelopment and use of brownfield sites in central parts of the city, in the 1990s, to provide housing and office spaces;
- Restoration and conservation of the historic city-centre areas;
- Greenfield development of commercial and retail centres on the city's edge, from the early 1990s to today.

All in all, Edinburgh's strategy for development is to balance the overall population, to retain the landscape setting of the city and to facilitate the economic and residential regeneration of inner-city areas. The city continues to grow, however, no rapid changes are expected in the course of the next several decades (ELSP, 2000; Knox, 1984).

2.2.2.3 Infrastructure and development of a transportation network

Edinburgh, situated in east central Scotland, is with other parts of the country well connected with a multi-modal transport network which comprises road, rail and air communications (Figure 2.19). The city itself has a compact urban form, with the centres of activities located close to arterial public transport corridors (Figure 2.20). Despite the fact that in recent decades there has been a recorded decentralisation of some land uses (particularly of employment and retail) and centralisation of others (i.e. population, see Figure 2.21), Edinburgh still keeps a great variety of local land uses which are distributed fairly evenly around the city and tend to support sustainable transport modes (McKirdy et al., 2008b).

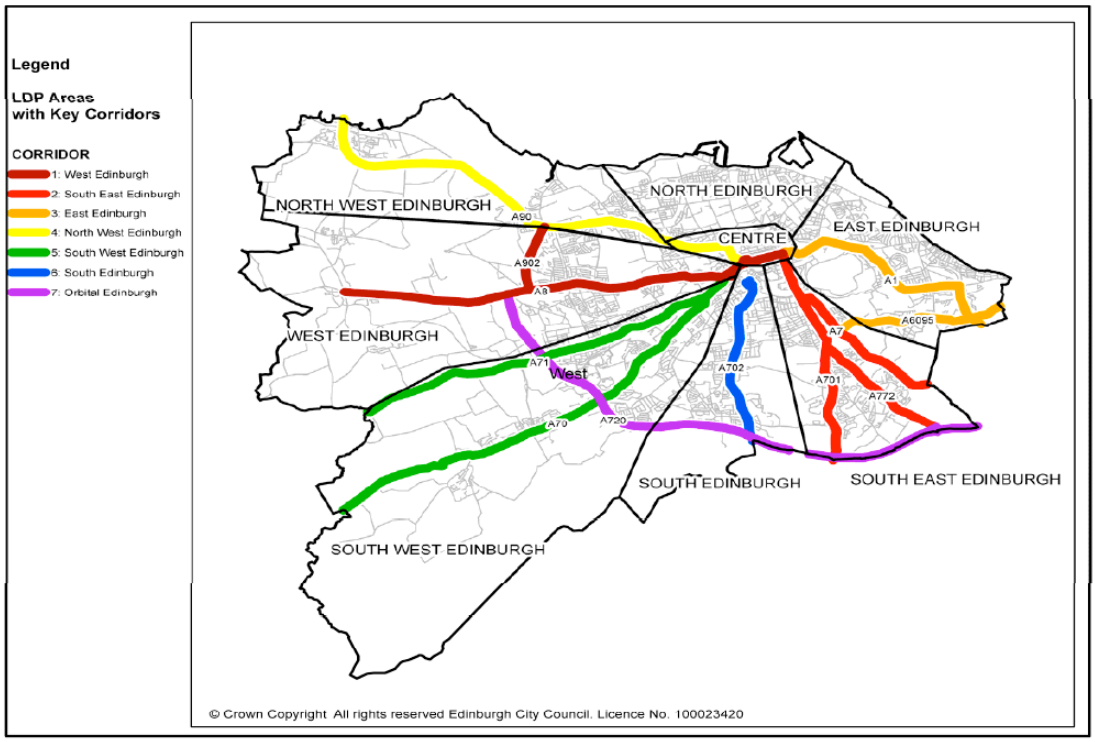
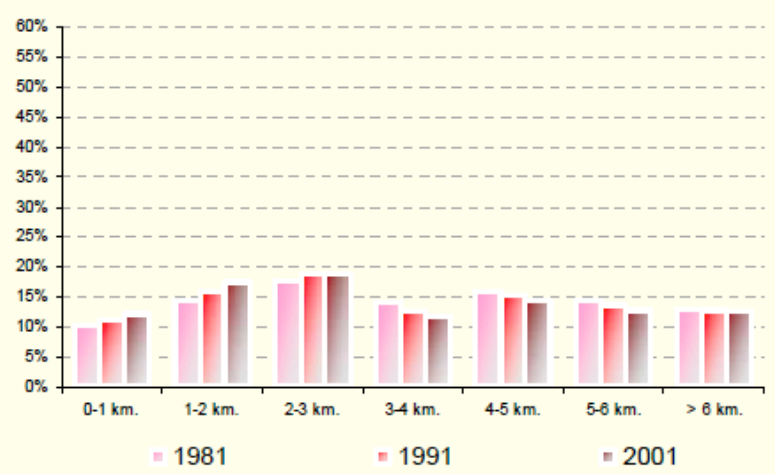


Figure 2.19: Corridor map as proposed in the new Edinburgh Local Development Plan: the city centre is easily accessible by radial transport routes, both road and rail (CEC, 2013b, p.15, illus., Figure 2).

	within 5 min. of major public transport routes	within 5 min. of town centre
Housing Stock 1991	76%	26%
Housing Completions		
- Recent	77%	32%
- Future	52%	8%
Office Development		
- Recent	89%	48%
- Future	61%	21%

Source : Censuses of Population, CEC Housing Audits and Office Schedules

Figure 2.20: Location of development relative to frequent bus services and Edinburgh's town centres (McKirdy et al., 2008d, p.4, illus., Table 1).



source : Censuses of Population

Figure 2.21: Population distribution by distance band from Edinburgh city centre (% of the total Edinburgh population) (McKirdy et al., 2008d, p.3, illus., Graph 1).

Like the majority of cities in Europe, Edinburgh too recorded a growth in car ownership although it has started to stabilize during the past decade (McKirdy et al., 2008c). Cars are mostly used to commute to work. Census of Population figures showed an increase in the proportion of people travelling by car, from 37% in 1981, to 49% in 2001, whilst the proportion of bus users fell from 40% to 26,2% (McKirdy

et al., 2008b), This, however, is still the highest of the United Kingdom cities (Ryley, 2008). The major car commuters to work are residents who work outside the city centre and those from outside the city (CEC, 2007). 84,660 work commuters, travelling from the surrounding areas into Edinburgh, were recorded in 2001, which is 32% of the city's working population (McKirdy et al., 2008b). In addition, it is expected that the average journey lengths to shopping, leisure and other non-work activities will soon prevail over work trips, much of them due to visits paid to 'edge-of-town' leisure and retail centres (McKirdy et al., 2008b).

With a growing population and in-commuting the increasing traffic congestion has been acknowledged and likewise, the pressure on parking spaces by people who travel to work by car (CEC, 2011a) and also pressure on public transport services. The city authorities have addressed this problem by a number of transport schemes which will help to improve the existing transport infrastructure. Along with several new park and ride sites, implementation of a congestion charge and bus priority lanes, the major project is a new tram service, which will connect the city centre with Edinburgh International Airport, located 8 miles to the west of the city centre.

At present, buses are the main means of public transport in Edinburgh. The bus network is extensive and covers all parts of the city as well as its suburbs and surrounding villages. The rail network is sufficiently developed in providing long-distant north-south connections, however, it is less developed on the regional/suburban level. In recent years, railway links were improved to the west of the city centre with the addition of new stations at Brunstane, Newcraighall, South Gyle and Edinburgh Park. Improvements in rail services are resulting in increased in-commuting by train, as the Census travel-to-work data indicate. According to figures from 2003/2004, most of them from Fife (1.48 million/per annum), followed by Glasgow (1.25 million) and West Lothian (1.08 million) (McKirdy et al., 2008b).

With regard to transport development in Edinburgh, the main principles of the spatial strategy in the SES plan area[7] (SESplan: Strategic Development Plan, 2013) are to reduce the need to travel and to promote the use of sustainable modes of transport. This is especially relevant because of the city's growth since further development will put more pressure on the transportation network. In this respect, the city centre is recognised as by far the most accessible part of the city if on foot, cycling, using public and private transportation as opposed to the peripheral areas, which are more car dependent (McKirdy et al., 2008d).

Indeed, 2001 Census data showed high walking levels for the journey to work or study (20,8%) (Ryley, 2008). Interestingly, although the highest walking levels are in the city-centre area, most of it is not exclusive to pedestrians.

The support and promotion of sustainable transportation means it is in the agenda of all local and national transport policies and strategic and development plans. Measures to achieve this aim have been addressed through (CEC, 2007; CEC, 2013b; McKirdy et al., 2008c; Ryley, 2008):

- Planning: promoting balanced communities with a mix of uses, locating development close to a public transportation network; the protection of existing and potential traffic-free cycle and walking routes (e.g. Edinburgh Core Paths Plan 2008 specifies a network of paths for walkers and cyclists through the city), etc.;
- Management: better integration between modes, implementing travel plans to promote sustainable travel, a traffic ban on some central streets, adjusting signal phases at pedestrian crossings to pedestrians who wish to cross, etc.; and

[7] SESplan (The Strategic Development Plan) connects six member authorities: The City of Edinburgh, East Lothian, Fife, Midlothian, Scottish Borders and West Lothian Councils who together "set out a spatial strategy which recognised existing development commitments and promoted sustainable pattern of growth" (SESplan: Strategic Development Plan, 2013, p.2).

- Using soft measures: provision of better information, educational facilities, local organisation encouraging participation in cycling and walking through lobbying and offering practical advice, etc.

2.2.2.4 Urban planning and the governance system in Edinburgh

The planning system in Scotland is well established and structurally defined. Development plans are the basis for decision making on planning applications. Plans consist of a strategy for future development and policies to guide future development and land use. Statutory documents that guide development planning in Edinburgh are: The National Planning Framework; A Strategic Development Plan (SDP – SESplan) which, at present, has not yet been approved. Until its approval, the Edinburgh and Lothians Structure Plan (ELSPW), a strategic development plan reviewed every five years, has statutory force. Strategic development plans set out a vision for long-term development of the city regions with specific regard to housing, retail and business development, green belts and infrastructure provision, whilst local plans lay out policies that guide decision on planning applications. A Local Development Plan must accord with the approved SDP and it sets out detailed policies and proposals to guide development.

Edinburgh's area is covered by two local plans: Edinburgh City Local Plan (ELCP) adopted in 2010, and Rural West Edinburgh Local Plan (RWELP) adopted in 2006. At present, the new Edinburgh Local Development Plan (LDP) is being proposed which will, once adopted, replace the two fore-mentioned local plans.

The most pressing issue with regard to the spatial development of Edinburgh, relevant for this research, is strong pressure to meet growing housing needs. Edinburgh is a growing city: 9% population and 23% household growth is projected by 2024 which may affect especially the city's urban form, transportation and the provision of (green) open space (McKirdy et al., 2008c).

The new development plans (SDP, LDP) have recognised and taken this into account. Therefore, the main criteria in identifying sites suitable for development

were (CEC, 2011b, p.10): "[…] good accessibility to public transport infrastructure, the impact on the landscape setting of the city and whether clear and defensible green belt boundaries can be formed." With respect to these criteria, the city's priority has been to build on brownfield land which has been achieved successfully (Figure 2.22).

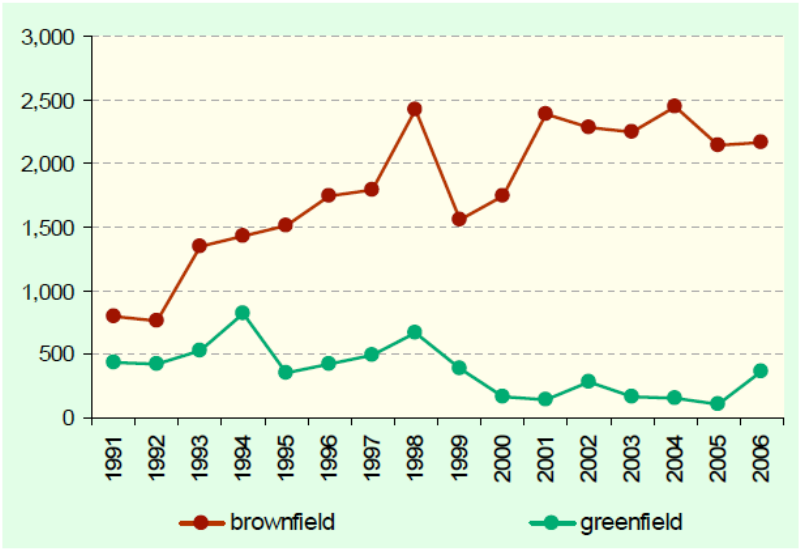


Figure 2.22: Housing completions by former land use (McKirdy et al., 2008a, p.8, illus., Graph 6).

Also, to accommodate future needs for growth, brownfield land remains a priority. SDP proposed two strategic (re)development areas (SDAs): the City Centre (with the largest mixed-use redevelopment project being St James Quarter, Carltongate and Quartermile) and Waterfront. However, due to too high growth, two new SDAs have been identified: West Edinburgh and South East Edinburgh (Figure 2.23). It is estimated that 8% of green belt land will need to be developed on, to meet these strategic requirements[8] (McKirdy et al., 2008c). There is ongoing pressure, mostly from housebuilders and landowners, to develop on green belt land, especially on the inner edges of the Green Belt and on the edges of existing settlements, e.g. Currie, Balerno, Ratho, South Queensferry, etc. (Bramley et al., 2004). Nevertheless, all current and proposed plans confirm that the Edinburgh Green Belt should be retained

[8] However, it should be noted that the area of Edinburgh Green Belt has increased by 24% since its original designation (McKirdy et al, 2008c).

without making any significant changes to it (e.g. in, SESplan: Strategic Development Plan, 2013; CEC, 2013a; ELSPJLC, 2000). Any changes needed, to accommodate the city growth's demands, are to be done incrementally over a long time period. McKirdy et al. (2008c, p.27) state: "Green Belt has helped to preserve compact form of the city and provided an invaluable landscape, recreational and biodiversity resource. However, rigid green belt policies may encourage 'leap-frog' development and longer travel distances – not entirely compatible with long-term sustainable development. Need to keep role, structure & boundaries of GB under review, taking account of long-term sustainable settlement strategy."

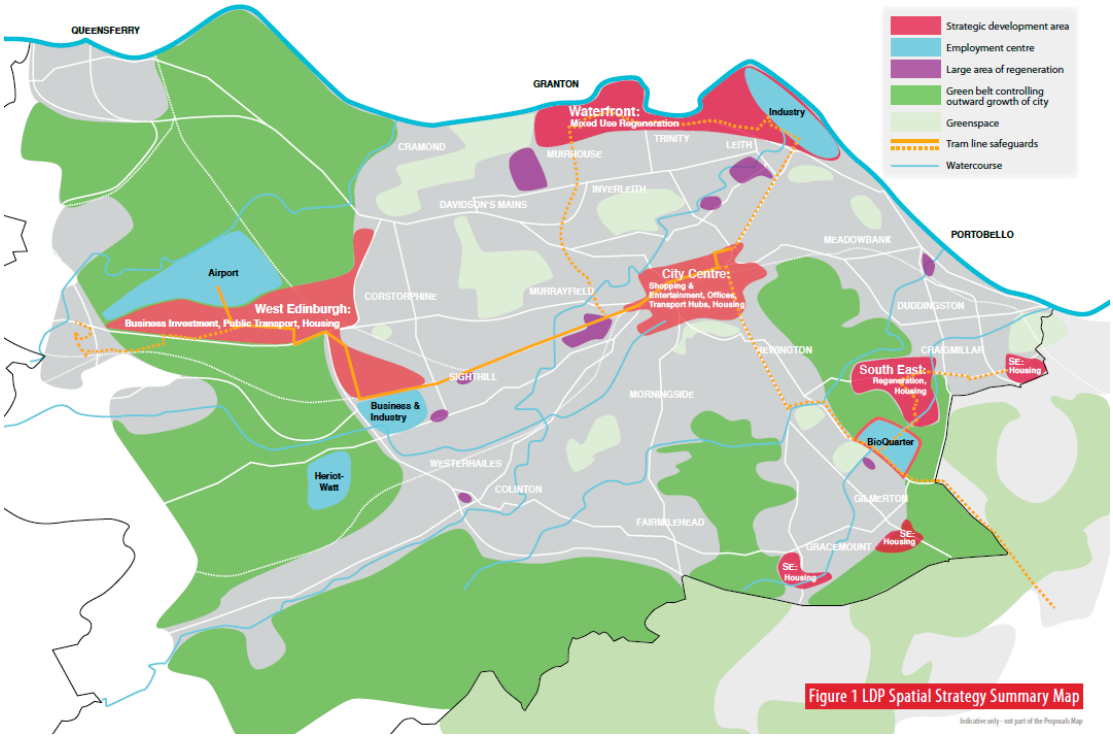


Figure 2.23: LDP spatial strategy summary map (CEC, 2013a, p.6, illus., Figure 1).

With regard to retail development, spatial policies are not in favour of out of centre sites where new commercial centres could be built (CEC, 2011b). Instead, the policies promote retail development in town centres across the LDP area, additions to existing shopping centres and supermarkets, and improving access to existing shopping centres, etc.

The new SDP, together with LDP, provides a missing link to strengthen the system of strategic spatial planning and development which is necessary for a development of good quality and affordable housing at locations accessible by sustainable means of transport (Turok and Bailey, 2002).

2.2.2.5 The peri-urban landscape in Edinburgh

One of the key components of Edinburgh's urban structure is its distinctive urban edges with the green belt adjacent to them, the regional park just outside the city's boundary, and the green corridors that perforate the urban form. The city is also recognisable by its extensive urban public parks, historic gardens, designed landscapes, and other types of open green spaces.

The accessibility of green spaces in Edinburgh is much better than in Ljubljana: at present, 88% of houses and flats lie within 400 metres walking distance of significant accessible green space[9] including green corridors, cemeteries, churchyards, transport amenity spaces or civic spaces (CEC, 2010). The Council plans to improve the accessibility even more, however, it will never reach 100% due to the city's highly developed land use.

The peri-urban landscape of Edinburgh mostly pertains to the green belt area. This area was designated 50 years ago, with the main objective to limit further expansion of the city and to prevent the agglomeration of urban areas. Apart from putting a greater focus on the preservation of land for recreational purposes over the protection of land for agricultural use, this objective has not changed much since it was first laid down in the green belt plan to present day.

The green belt has remained well preserved until now, with the exception of minor adjustments that have been made to some parts of Edinburgh's inner and outer boundaries. Moreover, green wedges[10] reaching into the city have been established.

[9] This refers to public green space of at least 500 m^2 in size (CEC, 2010).
[10] These are: Corstorphine Hill, Cramond/Silverknowes, Holyrood Park, Braid Hills and Water of Leith Valley, although Corstorphine Hill and Silverknowes may be more precisely described as 'islands' since they are not in physical contact with the green belt (Bramley et al., 2004).

'Urban island', settlements such as Balerno and Currie, located within the green belt, are contrasted with 'green spots' within the city. However, these settlements have not infiltrated or impinged on the green belt area as much as some other recent developments within the zone, for example: Edinburgh Airport, the Royal Highland Showground at Ingliston, Heriot-Watt University and Research Park at Riccarton, and several others (Bramley et al., 2004).

In the debate on future planning directions for the city, which should be supported by sustainability principles, green wedges have been recognised as a better alternative to the green belt in terms of accessibility (transport, recreation, amenity) and ecological functioning, given that in this case, green spaces are connected in a network and not artificially divided from each other (Bramley et al., 2004). This might be a possible scenario for the city's development in the future, especially when considering the growing pressure for development and the already established green wedges, as described above. In support of this concept, the Scottish Government's Nation Planning Framework 2 (NPF2) requires that a strategic network of green spaces and travel routs – Central Scotland Green Network (CSGN)[11] – is acknowledged in all development plans. Within CSGN frame, extensions of Edinburgh's green network have been identified through the Open Space Strategy.

2.2.2.6 The legal position with regard to access in Scotland

The United Kingdom has been known, traditionally, as a country where access to publicly owned land is allowed, whilst for access to privately owned land, that required permission from the owner. In the past, many landowners defended their property rights, mostly due to hunting or fishing reasons.

However, in recent years, there have been many changes with regard to land management across the whole of the UK. Especially in Scotland, the Land Reform (Scotland) Act 2003 (Scottish Executive, 2003) profoundly changed Scotland's

[11] The CSGN is a strategic network of woodland and other habitats, active travel routes, greenspace links, watercourses and waterways, providing an enhanced setting for development and other land uses and improved opportunities for outdoor recreation and cultural activity (SESplan: Strategic Development Plan, 2013).

access legislation. The act institutes the public's right to cross land and to be on land for recreational, educational and specified other purposes.

Succeeding the Land Reform Act, The Scottish Outdoor Access Code (SNH, 2005) sets out detailed guidance on the responsibilities of those accessing the land as well as those managing land and water. The Code explicitly specifies the land where access is permitted. This includes: mountains, hills, moorland, farmland (enclosed and unenclosed), forests, woods, rivers, lochs and reservoirs, beaches and the coastline, uncultivated land, grassland, on all core paths, golf courses (for crossing them), and open spaces in towns and cities (SNH, 2005). Access to these spaces should be enabled at any time of the day or night. The access rights do not apply to some places, such as houses and gardens, and non-residential buildings, land in which crops are growing, land next to a school and used by the school, sports or playing fields when these are in use, land developed and in use for recreation such as golf courses, or places like airfields, railways and construction sites, and visitor attractions (SNH, 2005).

Furthermore, the Code specifies the sort of activities that can be undertaken. These are mainly of a recreational nature, such as "pastimes, family and social activities, and more active pursuits like horse riding, cycling, wild camping and taking part in events)" (SNH, 2005, p.5). Activities that are excluded from access rights are, for example: hunting, shooting or fishing; motorised recreation (e.g. motor biking, off-road driving, etc.); not having a dog under proper control; and taking away anything from the land for commercial purposes or for profit (Scottish Executive, 2003).

2.3 Comparison of both case study cities

This section summarizes the findings from the in-depth review of both case study cities and it outlines their main similarities and differences, in accordance with the research topic.

2.3.1 Similarities of both case study cities

Both cities are similar in functional terms in that they are both capitals, with universities, political, public, health and other key institutions. All this is important for achieving a mix of uses. The figure below summarises the main facts and characteristics of both cities.

SIMILARITIES	Ljubljana	Edinburgh
Area	163.8 km^2	259 km^2
Population	272,220	486,120
Density	1,662/km^2	1,844/km^2
Historical establishment: both cities are significant for the medieval castle on the hilltop and the organically developed medieval settlement below it.	 	 

Figure 2.24: Similarities of Ljubljana and Edinburgh (Source: various sources).

2.3.2 Differences between the case study cities

2.3.2.1 Urban structure

Ljubljana's form is 'star-shaped' which has meant that, in urban development terms, the main transport and infrastructure corridors have been the primary concern of its planners throughout its history (Pichler-Milanović, 2003a). Particularly in the past 30 years, the extent, and boundaries of Ljubljana have changed considerably; mainly because some of what used to be nearby settlements have merged now with the city. Edinburgh, on the other hand, has remained a compact city, and one that has, largely, retained its integrity, with its planning strategy successfully maintaining a clear

separation between town and country. Figure 2.25 illustrates the main concept of the cities' structure.

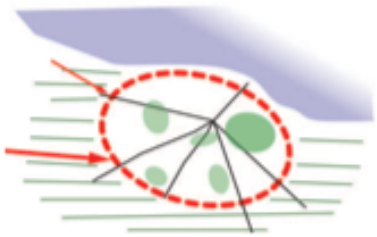
LJUBLJANA	EDINBURGH
	
Its urban development has been shaped by the road infrastructure connecting the city centre with its outskirts in a star-shaped form, intersected by green wedges (two of them are hilly) which sit either side of roads.	Compact and densely built, the city is defined by the city bypass and surrounded by green belt areas on its west, south and east side, whereas on the north side, the city is bounded by the sea. In the city itself, its green space comes in the form of large public parks, woodlands and semi-natural areas.

Figure 2.25: Urban structure of Ljubljana and Edinburgh (Source: Author's own).

2.3.2.2 Cities' growth strategies and implementation

Ljubljana and Edinburgh are cities that are growing and changing. However, different planning and management strategies have had a significant influence on the appearance (or not) of urban sprawl during the past few decades. In Ljubljana, in the early 1990s, spatial development was neglected because of the priorities of macro-economic reforms. This led to the expansion of a dispersed or scattered residential sprawl and an even larger urban sprawl made up of retail parks; city-edge greenfield and arable land have been taken over for land use, such as: large hypermarkets, free parking lots, multiplex cinemas, restaurants, fitness centres and outlets, etc. (Pichler-Milanović, 2003a). Consequently, Ljubljana's urban (sprawled) development can be described as a mix of 'continuous built-up areas', 'dispersed sprawl' and 'leap-frogging' houses (Pichler-Milanović, 2005). Edinburgh, on the other hand, in aiming to preserve its compactness, has been more concerned with the issue that if its density becomes too great, that may lead to 'town cramming' and its functionality as a city would become unsustainable as a consequence. In the latest Edinburgh City Council 'State of The Environment' report, these doubts about sustainability were rejected with the claim that, "sustainable settlements should be relatively compact,

with the highest concentrations of activity close to high volume public transport nodes. They should make maximum use of existing buildings and previously developed land, and should have a variety of uses in close proximity (including well-integrated open space) to enable every-day needs to be met locally" (McKirdy et al., 2008d, p.2).

Edinburgh's recent strong demand for land for further growth has not only been directed to the vacant and brownfield land[12] that is available but it has also been putting much greater pressure than previously on the green belt, particularly in the west of the city.

Because of such development pressures,[13] planners and the city authorities have been making more and more suggestions to rethink the shape of the green belt. The general public, on the other hand, tends to see green belt areas more as land of great landscape and ecological value, than as land which the statutory authorities can use when they are faced with the pressure to find other land on which to build (Bramley et al., 2004). Therefore in future planning actions, authorities should be well aware of the public's concerns in order to avoid any possible conflicts between different stakeholders.

2.3.2.3 Cities' respective travel characteristics and transport infrastructure development

The infrastructure network, which is closely related to the city structure and development, is very different in Ljubljana and Edinburgh. This, together with the distinctively different development strategies of both cities, represents an interesting basis for the exploration of the research phenomena and the objective of the comparison is to try to detect any possible relationship between the city structure and the use and accessibility of the peri-urban landscape.

[12] An objective of the current structure plan (East Lothian Council et al., 2003, para. 2.22, in Bramley, 2004) is to divert development to brownfield sites, which, however, come from the Midlothian municipality, whereas the City of Edinburgh still has a high proportion of brownfield sites which may be used for development.

[13] A development pressure is one of the main reasons to rethink the shape of the green belt, although it is not the only one. There are several other reasons, such as nearly used up brownfield sites in the city, and the varied intrinsic value of the green belt land.

Whereas in both cities public transport consists principally of buses,[14] the level of private transportation is considerably different. In Ljubljana, an increase in car ownership has been realised in the last few decades: in 2003, 90% of households in Ljubljana had access to a car for private use (Guzelj and Košak, 2003). In Edinburgh, car ownership has remained relatively low over the last 10 years, despite the growth in wealth in the same period (CEC, 2007). For illustration, in 2009/10, only 58% of households in Edinburgh had access to a car for private use (CEC, 2012).

The suburban railway system is not well developed in either city. However, the bus network in Edinburgh is extensive and thus caters not only for all parts of the city and its suburbs but also the surrounding city-region.

In Ljubljana, the multi-modal integration of transport on a regional level has been discussed in recent years but not yet brought into implementation. As a consequence of the poor suburban public transportation network, daily commuting to Ljubljana is most commonly via private car use (Pichler-Milanović, 2003a). There are more than 100,000 daily commutes to Ljubljana, of which, 90% of the journeys are made by private car. In addition, strong weekly commuting in Ljubljana should not be overlooked.

In Edinburgh, currently around 90,000 people commute into the city (*Commuting in Edinburgh*, 2013). However, it should be noted that there is a strong commuter flow between Edinburgh and Glasgow, which is facilitated by a bus as well as a rail service.

The last census in 2002 (Ljubljana, 2013) showed that 63% of the inhabitants of Ljubljana commute to work by car whereas only 21% of them used public transport. In Edinburgh, too, the principal method of commuting to work was by car, at 42%, while 31% of journeys were made using public transport (bus and rail) (CEC, 2012). However, in neither city was work-related travel the most frequent reason for

[14] The tramline is soon to be operational in Edinburgh. However, it should be noted that the tram system used to be in operation in Ljubljana as well, and at present there is an open discussion on the possibilities of the reintroduction of trams.

people's journeys. In Edinburgh, this was shopping; and in Ljubljana, it was leisure travel (The Scottish Government, 2013; Guzelj and Košak, 2003). Leisure travel is becoming more and more important; this information is highly important for the topic of this thesis.

2.3.2.4 Access to land

Public access to land for recreational and leisure activities is allowed in both countries. In Scotland, free access became a commonly recognised right a decade ago, when the Land Reform (Scotland) Act was passed in 2003. This act regulates access to all land owned publicly and privately, respectively. In Slovenia, free access has been a common practice for a long time and thus, in a formal sense, access is either not specifically legislated for or is legislated within a specific sector. However, it should be noted that, actually, with passing the Land Reform Act, Scotland enabled access to land for more activities and with greater variety of forms of access compared with Slovenian acts. For example, in Scotland access to land is allowed to cyclists, horse riders, and wild campers whilst in Slovenia access to off-path land is only allowed on foot and wild camping is not allowed at all.

Nevertheless, in general, both Slovenia and Scotland share common features with regard to forms of access, reasons to regulate access, owners' rights to restrict access and activities pursued on the land. The access regulation and also forms of access and activities on land are regulated in Slovenia within individual sectors, whilst the Scotland Outdoor Access Code provides regulations for all land use.

	Slovenia	Scotland
Public access to the forests	Right of public access but owner has some rights to restrict access	Right of public access
Right to use non-wood forest products (NWFP)	Right to use NWFP generally admitted but owner has some rights to restrict	Use NWFP generally admitted provided that no damage is caused

Table 2.4: Comparison of Slovenia and Scotland's relevant regulations (adapted after Bauer et al. (2004)).

Finally, public access to land is a fundamental right of people in both countries. However, it is important to differentiate between *access* and *accessibility*. This concerns not only the right to be there but also ensuring both quality access in physical terms and encouraging access and use of places (Molteno et al., 2012). These characteristics of accessibility are the major interest of this research and are discussed in depth in the next chapters.

2.4 Key conclusions

In accordance with this thesis' interests, the most interesting similarity of Ljubljana and Edinburgh is that they are both growing cities. Namely, this will affect the development and change of their city edges most.

On the basis of the assumption that the city will continue to expand in the future, urban planners and architects in both cities have produced many analyses and programmes, in order to regulate, control and direct the spatial development of their respective cities. Furthermore, landscape planners and architects have been searching for answers as to whether green open spaces should be left intact in the future, given the awareness of the importance of green open spaces for human wellbeing. Different urban forms and development strategies have been reviewed (e.g. green belt, green wedges), however, there is no single answer and each case has to be assessed specifically, giving due consideration to the local conditions of each place. The application of methods, described later in this thesis, has aimed to find patterns of use and examine matters of accessibility to peri-urban green spaces which are conditioned by specific local issues, as well as to find patterns of use that might be applicable, generally, in both cases.

Chapter 3: Framework and area of thesis

Chapter One set out the main challenges of the thesis, which aims to elucidate people's needs and attitudes to peri-urban open spaces, and to investigate how the access to these spaces can be assured in a more sustainable and inclusive way. To gain knowledge on what has been found on these issues to date, in this chapter, the literature on academic research and examples of practical applications have been reviewed.

The chapter discusses the literature review on the three main topics of this thesis. The first one is the peri-urban landscape. Since the previous chapter has pointed to the gaps in knowledge on the notion and characteristics of peri-urban space, this chapter outlines its notion in this research's context and constructs its typological criteria needed for further research purposes. Also, on the basis of what has been written on this topic so far, it discusses the main drivers which influence the appearance and evolvement of peri-urban spaces.

The second topic relates to the spatial patterns of peri-urban areas. This pertains to accessibility by transportation infrastructure as one of the drivers that have been influencing and changing peri-urban areas. Its role within different city development strategies is examined and evaluated. In accordance with the aim of this thesis, to ensure sustainable access to peri-urban green spaces, the examples of practical implications of sustainable accessibility are explored and evaluated.

The third topic considers the social patterns of peri-urban areas, i.e. it explores in what ways people use peri-urban landscape. Specific emphasis is placed on how the literature has observed and recorded people's leisure and recreational patterns of use and their preferences for peri-urban green space types and attributes. It also tackles the impact of transportation infrastructure on the peri-urban landscape accessibility for them and what consequences this has for the people that are using it.

The final section of this chapter outlines the main theories which conceptually guide the empirical investigation of social and spatial patterns of peri-urban space. Sense of place is particularly important when examining the relation between people and peri-urban environment. Furthermore, as a foundation for empirical investigation, grounded theory is identified as a basis for understanding and elucidating the social patterns, and the landscape planning approaches have been reviewed in order to guide the analysis of spatial patterns.

3.1 Peri-urban landscape as the interface between urban and rural setting

The notion of the area that links the urban and rural environment varies across the study disciplines. This fact suggests that the landscape is largely defined by our way of looking at space. Thus whilst the majority of people have a clear conception of what would correspond to the image of the urban and rural landscape (Simon et al., 2006) the concepts of the peri-urban landscape are not consistent at all. Moreover, no consistency can be found in the literature, even on the use of one term in addressing this area; the variety of labels that different authors have used to name this area is large. Labels most commonly used in the literature (besides 'peri-urban') are: 'urban-rural fringe', 'urban transition zone' and 'semi-urbanised area', 'semi urban', 'sprawl', and 'urban fringe' (Meeus and Gulinck, 2008; Phillips et al., 1999b). Phillips et al. (1999b) consider these labels as interchangeable with the term 'peri-urban', whereas Meeus and Gulinck (2008) in their comprehensive literature review differentiate the labels: 'semi urban', 'peri-urban', 'sprawl' and 'urban fringe'.

This variety of terms, used to address the space between urban and rural, without a doubt makes it difficult for planners and authorities to set guidelines and spatial polices which deal with this space. Problems may appear already when searching for examples of best practices to lead the development of peri-urban areas in various cities, and to distinguish between locally specific and general characteristics of this space.

Accordingly, this thesis focuses on defining the distinction between the four keywords discussed by Meeus and Gulinck (2008) and focuses on their relation to

the term 'peri-urban' as the subject of this thesis. Taking into consideration Meeus and Gulinck's (2008) conclusion that, due to the various different approaches, frameworks, needs etc. on the subject, finding a general definition could be very difficult or even impossible, this thesis focuses on the definitions within the discipline of spatial studies.

3.1.1 Definition and critical evaluation: peri-urban, semi-urban, urban fringe and urban sprawl

Within the discipline of spatial studies, a term **peri-urban** is widely used when referencing an area on the edge of the cities, which represents an interface between rural and urban; and where urban and rural development processes meet, mix and interact (*PeriUrban Parks;* Hall et al., 2004; Meeus and Gulinck, 2008; Phillips et al., 1999a; Phillips et al., 1999b; Tacoli, 1998). It is worth noting that all of the authors agree on the existence of specific areas and not just a dividing line between "rural" and "urban", although land use policies consider peri-urban areas as either within the rural or the urban (Meeus and Gulinck, 2008; Tacoli, 1998).

The term "**semi-urban**" is in the reviewed literature widely equated with the "peri-urban" (Meeus and Gulinck, 2008; Shaw, 2005; Simon et al., 2006). However, Meeus and Gulinck (2008) noted that the "peri-urban" is a more specific area which refers only to the areas in closeness to the urban cores. Furthermore, Simon et al. (2006, p.11) stressed the importance of acknowledging the peri-urban zone as "an extension of the city rather than as an entirely separate area." Hence peri-urban is in this thesis taken as a subset of "semi-urban"; the latter is considered as any incompletely urbanised area, not necessarily adjacent to the city.

The term "**urban fringe**" was for the first time used by Smith, who referred to it as a "built up area just outside the corporate limit of the city" (Smith, 1937; cited in Masum, 2009, p.2). Likewise, Meeus and Gulinck define it as "a border zone of an urban area" (Meeus and Gulinck, 2008, p.11). Amongst other authors it is mainly described as the transitional zone between urban and rural landscape. For example, in the SURF project urban fringes are described as "[...] the areas between urban and

rural landscape. These spaces are often neglected and under threat from growth and expansion and inconsistent spatial planning policy" (SURF Project – Aberdeen: Reflection Report, 2012, p.4). It is similarly described by Qviström and Saltzman: "The urban fringe is something in between, and it is therefore treated as wasteland as its character and qualities are very difficult to grasp and analyze using modern dichotomies as urban – rural" (Qviström and Saltzman, 2007, p.6): and by Johnson: "The term urban fringe: an area where the suburban growth was taking place and where urban and rural uses of the land were mixed, forming together a transition zone between city and countryside" (Johnson, 1974; cited in Adell, 1999, p.5). Likewise the term '**rural-urban fringe**' (Carter, 1981; in Adell, 1999; Wehrwein, 1942) is also described in a similar way, although Andrews (1942) believes that urban fringe is smaller than the rural-urban fringe. Conversely, Gallent et al. (2006) argue for the rural-urban fringe not being simply a transition zone between rural and urban, but they define it as "a functional landscape with unique attributes" (Gallent et al., 2006, p.xvi).

'**Urban sprawl**' is according to the EEA (2006, p.6): "a physical pattern of low-density expansion of large urban areas." A large body of literature describes sprawled development as patchy, scattered and leap-frog (EEA, 2006; Harvey and Clark, 1965; Whyte Jr, 1958), and often characterised by the high use of private transportation (EEA, 2006; Pryor, 1969).

It can be noted from above, that the notions of *peri-urban* (area) and *urban fringe* are relatively similarly described. For example, Gallent et al.'s (2006) characterisation of rural-urban fringe corresponds to what Meeus and Gulinck (2008) describe as a peri-urban landscape; this space is described as a (peri-urban) area or a zone (urban fringe) between urban and rural areas. However, describing this space with the term 'transitional' might be misleading since both peri-urban area and urban fringe are in general considered as specific landscapes with their own characteristics. The variety of notions used reflects differences in national and cultural use of terminology, respectively (especially between the UK and central Europe), which have been stressed also by Ravetz and Warhurst (2013, p.170): "[…] in fact the term 'peri-

urban' is not often used in the UK, and other terms are more common, such as 'urban fringe', 'rural-urban fringe', or 'countryside around towns'." To some extent, these differences in terminology reflect different national spatial, environmental and economic planning strategies and policies which have shaped this space on the edge of cities.

The PLUREL project[15] dealt with the peri-urbanisation on a pan-European level. To bridge the above-discussed differences among European countries, PLUREL created rural-urban region (RUR) which, as already noted in Section 2.1.2.2, "can be considered as the spatial extension of the Functional Urban Area (see e.g. ESPON 1.1.1, in ESPON, 2005), including both the peri-urban and rural part of an urban catchment up to a distance where daily commuting ceases due to travel times becoming too long". In other words:

The urban area + peri-urban area = Functional Urban Area;
The urban area + peri-urban area + rural hinterland = rural-urban region (RUR).

Peri-urban areas are defined by PLUREL as "discontinuous built development, containing settlements of less than 20,000, with an average density of at least 40 persons per km^2 (averaged over 1 km^2 cells)" (Piorr et al., 2011, p.10).[16]

According to PLUREL (Piorr et al., 2011, p.24), peri-urban area includes:
Urban fringe – a zone along the edges of the built-up area, which consists of a scattered pattern of lower density settlement areas, urban concentrations at transport hubs and large green open spaces;
Urban periphery – a zone surrounding the main built-up areas with a lower population density. This can include smaller settlements, industrial areas and other urban land uses.

[15] The PLUREL project: Peri-urban Land Use Relationships - Strategies and Sustainability Assessment Tools for Urban-Rural Linkages is a European integrated research project within the European Commissions sixth framework programme. The project duration was January 2007 – end of December 2010.
[16] A more detailed literature review of the peri-urban typologies and peri-urban densities can be found in Section 2.1.2.1.

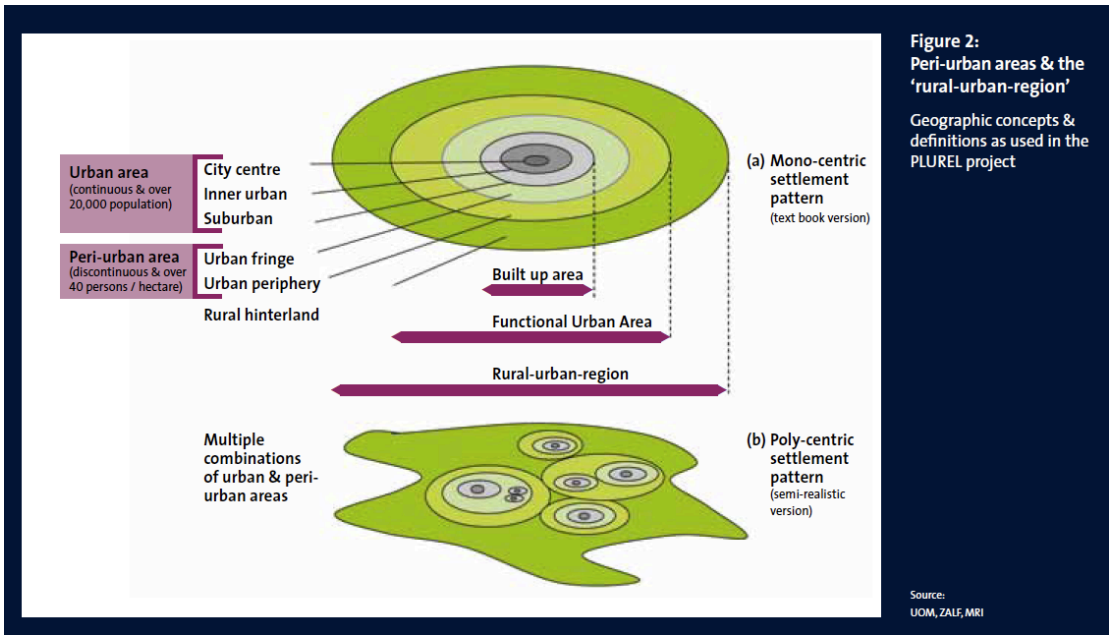


Figure 3.1: Conceptual diagram of peri-urban areas, as used in the PLUREL project (Piorr et al., 2011, p.25, illus., Figure 2).

The focus of the thesis is only on the green spaces in the frame of peri-urban areas. The definition of peri-urban green space is based on Schipperijn et al.'s (2010, p. 25) definition of urban green spaces: "publicly owned and publicly accessible open space with a high degree of cover by vegetation, e.g. parks, woodlands, nature areas and other green space. It can have a designed or planned character as well as a more natural character." The use of (peri-)urban green (Schipperijn et al., 2010, p.25) is defined as: "any sort of visit to an urban green space, without looking at the duration of the stay, the reason for visiting or the activity done while visiting; e.g. passing through on the way to a destination is also counted as use."

To sum up, this thesis uses the notion *peri-urban area* to address the area between the rural and urban respectively, the city and the countryside. It considers it as an area with its own dynamics that differ from those of either urban or rural areas. *Peri-urban landscape*, as the landscape within peri-urban area, is distinguished from the rural and urban landscape by its distinct character. PLUREL's definition of peri-urban area is, in this thesis, taken precisely as a basis for the spatial delineation of peri-urban case study areas. On this point it needs to be noted that peri-urban areas all over the Europe vary in their characteristics of spatial organisation and

concentration of land uses (Piorr et al., 2011). Understanding these characteristics is the first step in understanding their dynamics, and they are more precisely described in Section 3.1.2.

3.1.2 Defining the character of the peri-urban landscape

In a quest for the depiction of the area between urban and rural, a principal question to be answered is: What are the areas that differ from the rural and urban landscapes in their characteristics to the extent that they can be called neither city, nor countryside?

A considerable amount of literature describes the peri-urban landscape as a landscape with low identity and recognisability (in comparison with the urban or rural landscape). Other expressions that are used among authors when defining the character of the peri-urban landscape are, for instance, 'ambiguous', 'fuzzy' and 'transitional', suggesting that there is no clear-cut dividing line between urban and rural, or city and countryside, respectively.

The following quotes from various scholars emphasise the ambiguity and slippery definitions that characterise the peri-urban landscape:

Qviström & Saltzman (2007, p.4): "[…] their character is often perceived as provisional and ambiguous, as they do not fit into established categories such as urban and rural, nature and culture."

Phillips et al. (1999a, p.5): "One must recognise that the peri-urban is often not a discrete area, but rather a diffuse territory identified by combinations of features and phenomena, generated largely by activities within the urban zone proper."

McGregor et al. (2006, p.5): "[…] today, there are different types of transition zones between city and countryside – between what is unambiguously 'urban' and supposedly typically 'rural'. Some may resemble relatively uniform sprawl, others honeycomb structures or spines of growth along specific corridors. These transition

zones – generally known as peri-urban areas in English – vary in width and nature, and are subject to rapid change with increasing urban pressures."

Allen (2006, p.35): "[…] the PUI (i.e. peri-urban interface) is often characterised by a 'patchwork' of different developments, including residential settlements interspersed with vacant land (often held for speculative purposes) and agricultural land shifting from subsistence to commercial uses."

The lack of knowledge of peri-urban characteristics and processes has, in recent years, raised the interest of scholars across Europe. The characteristics of the space between rural and urban have been discussed particularly in the countries of Northwestern Europe: in the UK, a country with spatial planning traditionally oriented toward a strong rural-urban division (see e.g. Gallent et al., 2006; Scott et al., 2013; Shoard, 2000), in the Netherlands and Belgium which are countries with a high urbanisation rate (see e.g. Hornis and Ritsema van Eck, 2008; Palang et al., 2011; Tjallingii, 2000) and in some other countries, particularly Scandinavian ones (see e.g. Busck et al., 2008; Qviström, 2010; Qviström and Saltzman, 2008). Peri-urban challenges have become also a topic in EU founded projects, programmes and networks such as SCATTER, PLUREL, SURF, PURPLE, etc., as already mentioned in Section 1.2. The PURPLE network, for example, paid a significant attention to the *everyday* peri-urban open space which is not protected with specific regulations such as Natura 2000. Hence, such peri-urban open space is under threat to become converted to housing, industrial buildings, etc. The PURPLE network saw multifunctional land use necessary to improve resilience of peri-urban open space and it has also provided various instruments to achieve this multifunctionality (PURPLE, 2013). Furthermore, the SURF project, which finished in 2012, also focused on the better development and management strategies to achieve sustainable future of urban fringes. SURF's final recommendations called for a greater European recognition of various roles of the urban fringes, and the urgency for formal government and governance practices to support the sustainable development of fringe areas (SURF, 2012).

The rising interest in the peri-urban topic may be trigged by the urgency to find better approaches for cities' transformation due to a growing urbanisation. Consequently, the researches, particularly the ones carried out within the EU framework, have focused on approaches where different European cities have been taken as case studies to compare, according to specified aims, the peri-urban characteristics and growth strategies. Such comparisons are certainly useful since they provide a common ground for discussion of cities' and countries' differences and similarities in spatial, environmental and economic planning strategies and policies.

However, despite the growing interest in peri-urban landscape, this thesis recognises two issues that have not been adequately resolved in studies to date on the topic of peri-urban landscape.

Firstly, until the early 21st century, peri-urban landscape was hardly ever the main topic of research; rather, the focus of study on landscapes has been on either rural or urban contexts. Traditionally, researchers investigating the urban areas and their surroundings have generally clung to concepts of 'urban' or 'rural' that reinforce the urban-rural dichotomy, underlined by the notion that landscape patterns and behaviours of rural and urban character are very different and easily distinguishable (Simon, 2008). Moreover, according to Gallent et al. (2006) and Meeus and Gulinck (2008), land use policies have remained wedded to the rural-urban division and have generally not considered the peri-urban issues,[17] although the need for policy solutions for peri-urban areas has been expressed repeatedly by several researchers (Adell, 1999; Allen and Davila, 2000; Piorr et al., 2011; Qviström, 2008). For illustration, Adell (1999, p.3) writes: "These areas are always difficult to define and, moreover, they are also bound with problems inherent to the conceptualisation of both rural and urban worlds. In that context, policies aiming to alleviate poverty are

[17] Such critiques, however, are rather generalised since examples can be found, of plans and policies which have been produced to guide specifically the development of the peri-urban areas. Rural West Edinburgh Local Plan (RWELP) (CEC, 2006) is a good example of a comprehensive treatment of the area between the city and countryside. Although the Plan's area is rigorously defined, and not ambiguous as may be more typical for peri-urban space, its current and future land uses have peri-urban character and have been acknowledged, as such, in the plan, and not ignored, which is often a critique of academia, when dealing with peri-urban spaces in planning practice.

still considering the existence of either "rural" or "urban" poverty, while the reality of many regions in the developing world suggests that every-day life and livelihood strategies of "multispatial households" are increasingly taking place within an integrated rural-urban space (Tacoli, 1998b, Rigg, 1997)."

However, in the late 1980s, peri-urban areas were recognised as a separate entity in research, if not in planning practice, and it was suggested to be looked upon as a link between rural and urban, rather than a divide. According to Adell (1999, p.4): "A "paradigm shift" seems ready to emerge, following a movement initiated in the late eighties by the research about interactions and linkages between rural and urban areas. This trend was seen at that time as a response to "the bulk of research [that] has been devoted to the analysis of urban and rural 'development' as separate issues" expressing a "growing awareness of the importance of urban-rural relationships, and a dissatisfaction with urban-based, centralised models of development" (Unwin, 1989)." The idea of shifting planning based on the contradiction between city and countryside towards structures where the space is not well defined, has been discussed in the academic sphere by several authors. A structural approach, for example, looks beyond the physical land use processes towards the unseen drivers like ideology and power, offering a way to explore the peri-urban characteristics. Castells, (1996) introduces 'the space of flows', which relates to the global flow of goods, information and people, as an opposition to 'the space of places' or local spatial organization of human experience. For its *flows*, however, this kind of society demands a very high accessibility. To some extent it may depend on the developing information and communication technology, but a large proportion of it remains based in the accessibility, which depends on physical infrastructure.

Staying focused on the physical land use processes, in recent years several authors such as Racodi (1999), Phillips et al. (1999a) and Palang et al. (2011) have stressed the lack of research specifically in the peri-urban context. Racodi for example researched the poverty relevance of the peri-urban interface. She states: "[t]he effort to identify research which specifically focuses on poverty in peri-urban areas drew a near-blank. The search was, therefore, broadened to include studies of processes of

change, which appeared to have some poverty relevance. [...] Most of the analysis which follows will, therefore, consider rural poverty and urban poverty" (Rakodi, 1999, p.2). Furthermore, there is a lack of specified research; e.g. Palang et al. (2011, p.2) write: "Again, most of the research into peri-urban landscapes so far has been done on a rather general scale; we lack information about what is happening in those "vast monotonous bedrooms that surround our cities."

This leads to the second issue, which is the (lack of) knowledge on the activities that people perform in the peri-urban landscape. Peri-urban areas have been described as vast, temporary, messy, ambiguous, etc., however to-date, no research has specified what makes their character so undefined. Is it the temporal land uses not acknowledged in legal documents, or the activities that people perform in peri-urban landscapes and which cannot be qualified as either rural or urban? Genuinely, the character of peri-urban areas entails both parameters: spatial as well as social ones. Namely, people perform activities, they interact with the space and with each other. Conversely, spaces influence people in different ways. The two dimensions are interrelated and the mutual interrelation should be recognised in any characterisation of peri-urban landscape. In this sense, Qviström & Saltzman (2006, p.22) see the opportunity for enhancing the knowledge of activities for better future planning of these areas: "[...] a key to understanding the landscapes of the fringe is to bring forward their temporary character, and to focus on the interactions between spatial plans and everyday activities." With respect to transferring such gained information to policy, Gallent et al. (2006) stress that the knowledge of how communities use and access the fringe has been set among the crucial areas to be addressed in future policy. However, as already noted, the problem is that most of countries do not have specific policy, plan or strategy for peri-urban areas.

Hence, it can be argued that the peri-urban landscape has its own morphological shapes and functional processes; it has been grounded and driven by the mutual interaction between activities that people perform there and space that people interact with. However, on the basis of the literature reviews, this thesis finds the knowledge of the peri-urban character, specifically in terms of land uses and activities

performed there, still not sufficient and rigorous enough to present an adequate basis to deal with this space in planning practice and policy implementation. Accordingly, more knowledge is needed, of the peri-urban characteristics. This thesis finds the concepts of two disciplines provide a useful basis for further exploration of this linking milieu; human geography and landscape planning.

Whilst landscape planning offers methodological approaches that are commonly used to analyze spatial characteristics of landscape, human geography is a discipline that studies human activities and yet its approaches and its research methods (especially qualitative ones) have not been frequently used in recent studies on peri-urban landscape. In accordance with an argument postulated in this thesis; i.e. that knowing the needs of people and activities that they perform in peri-urban landscape can help in planning future sustainable development of these areas, this thesis sees an opportunity in the discipline of human geography, to learn how people connect with the space and place and to elucidate their needs. Accordingly, the approach of *humanistic geography* is used to address this question and will be discussed in detail later in this thesis.

To sum up, this thesis recognises the existence of peri-urban landscape as an independent entity and yet as a link between rural and urban. Despite (or perhaps exactly because of) their fuzzy and ambiguous character that might make them unwanted and overlooked in spatial policies, this study recognises their importance in the mix of functions, processes and land uses. The last vary from food production areas and recreational zones to shopping centres, urban waste disposals, housing settlements and other various uses. In this sense, this study aims to identify land use types, significant for peri-urban landscape, in order to specify peri-urban landscape character more profoundly. Peri-urban landscape is characterised with the methods of landscape typology, described in detail in Section 3.1.3, which follows.

3.1.3 Peri-urban land use types

In their extensive typological project, Marušič et al. (1998) determined several categories of land use types[18] on the basis of their morphological characteristics – climate, relief (waters), and land use (surface cover). The categories are:

- basic patterns, which also form the most common typological groups (e.g. mountains, plateaus, plains);
- particular or specific landscape patterns, which are identified within landscape areas in the ongoing characterisation work; and
- general or widespread patterns, which are patterns of intensive human activity where natural characteristics have been lost completely or where their morphology (external visual appearance) can be classified by the typological criteria of settlement patterns. These are the landscape patterns of urban fringes, industrial areas, and all forms of contiguous settlements in general.

On this basis, general peri-urban land use types in this research are formed (on the basis of Cadieux, 2008; Marušič et al., 1998; Piorr et al., 2011; Ward Thompson, 2002) as follows:

- areas of residential-scale agriculture (city (urban) farms, allotments, community gardens);
- areas of intensive, industrial-scale agriculture;
- wastelands and brownfield sites;
- areas of cultural landscapes, conserved as historical parks (Country Parks, Regional parks, Local parks, Nature parks; informal recreation areas; linear green spaces, tree belts and woodland, river and canal banks);
- protected natural areas for active and solitary recreation (National parks and other wilderness environment).

Land use types are defined on the basis of criteria which should reveal their morphological landscape characteristics (as stated above), and express the spatial

[18] Marušič et al. (1998) use the term landscape pattern instead of term land use type.

homogeneity of landscape areas. The list of general peri-urban land use types is the foundation for the peri-urban landscape delineation, which will be presented later, in the empirical part of the thesis.

3.1.4 Drivers of change to peri-urban land use

Peri-urban landscape is a new landscape; it differs from the traditional ones – like rural or urban landscapes – in its dynamics that comprise changing perceptions, uses and attitudes of people who are interacting with it (Antrop, 2005; Qviström and Saltzman, 2006). Therefore it is necessary to look at the drivers of its change in the wider context, i.e. on a regional scale. Then its role as an interface between rural and urban can be better understood and the research issues better addressed.

There are a large number of drivers of peri-urban land use change. Within the PLUREL project, Ravetz et al. (2008) have identified the drivers, which are listed in the first box of the Figure 3.2, below.

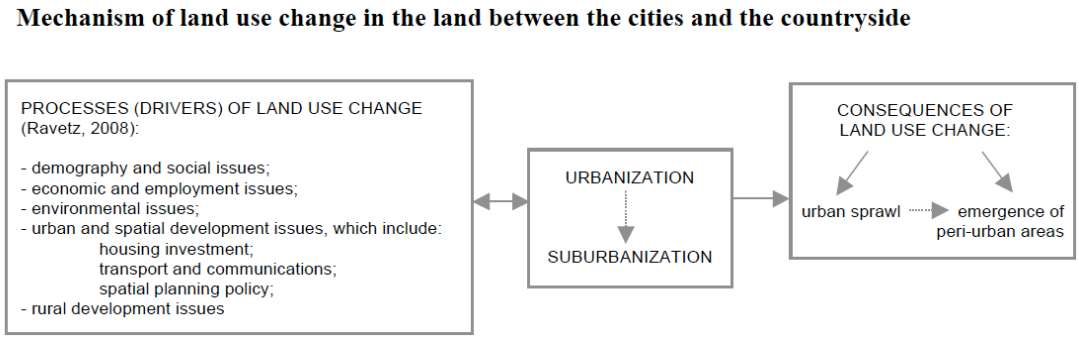


Figure 3.2: Comparative diagram of the land use change drivers and consequences, between the cities and the countryside (Source: Author'S own, adapted after Ravetz et al. (2008)).

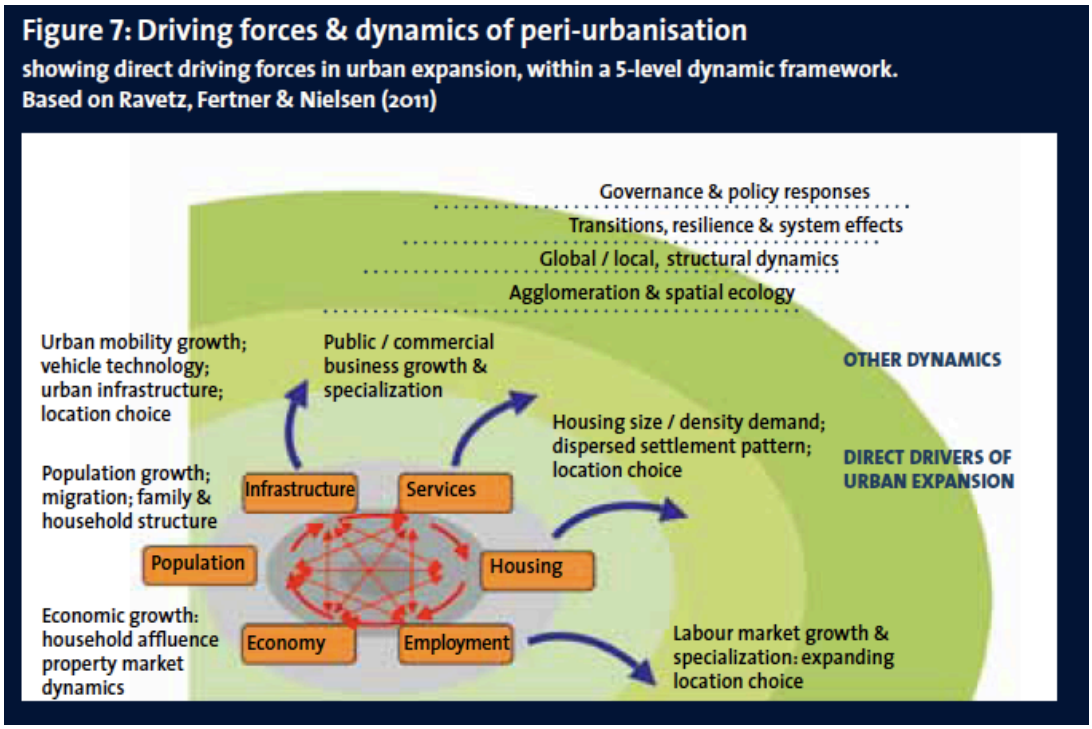


Figure 3.3: Driving forces and dynamics of peri-urbanisation, as indicated in PLUREL project (Piorr et al., 2011, p.32, illus., Figure 7).

Among the drivers, indexed above, there are many connections, overlaps and interactions with each other. However, in accordance with the subject of the thesis, further discussion is only focused on the transportation issue and the influences/consequences that it brings to the accessibility of peri-urban green open spaces.

According to several sources (EEA, 2006; Ravetz et al., 2008; Spiekermann and Neubauer, 2002) transport and communications are of the highest importance to the peri-urban development in the future. Infrastructure development may specifically promote in- or out- migration, counter-urbanisation and reurbanisation. For this reason, infrastructure can be a very effective planning instrument for directing human activities, which has already been discussed by Schrijnen (2000); on one side it can prevent them (e.g. by not implementing infrastructure for heavy (motorised) traffic), and on the other side it can stimulate them (e.g. with provision of public transport and walking and cycling infrastructure). Conversely, incautious planning of transportation infrastructure can lead to urban sprawl. There are many references to

the relationship between urban sprawl and the transportation/infrastructure network (e.g. EEA, 2006; Gayda et al., 2005; Handy, 2005). A road network is proven to be an accelerator of urban sprawl (EEA, 2006; Handy, 2005); whilst a rail network is considered to be better in terms of enabling accessibility to people who do not own a car. In addition, it is more sustainable in terms of emissions. Nevertheless it still generates sprawl, mainly around access points (Gayda et al., 2005; Handy, 2005). The most negative effects of urban sprawl, accelerated by transportation infrastructure, are the increased road transport emissions (Bart, 2010) and spatial fragmentation. The latter is an important factor in the decrease of biodiversity, functioning of agriculture and preservation of open space (Hidding and Teunissen, 2002; Piorr et al., 2011). It has been reported, that in the decade 1990-2000, the growth of urban areas and associated infrastructure throughout Europe consumed 0.25% of the total area of agriculture, forest and nature land (EEA, 2006). Urban areas grow but peri-urban areas grow faster. According to Piorr et al. (2011, p.10), in Europe "[...] there is about 48,000 km^2 of built development on peri-urban areas, almost equal to that in urban areas. But while most urban areas are now slow growing (at 0.5-0.6% per year), built development in peri-urban areas is growing at four times this rate." Considering that the knowledge of peri-urban area dynamics is rather unknown and lacks detailed research[19] another unwanted consequence, which should not be taken superficially, is the homogenisation of landscape. Therefore it is necessary to establish a balance of landscape elements, their complexity and contrast, which are some of the foundations for the viability of the landscape.

The viability of peri-urban areas (or any kind of space) is based on the balance between built and open space. What this balance is, and how to achieve it, has been much discussed; it stems from the urban form models, their relationship with the surrounding countryside and the drivers that may enhance/spoil this balance. The question, which will be considered in the following discussion, is what type of peri-urban landscapes are viable landscapes (what kind of landscape elements constitute attractive landscape), and how is their viability affected by the transportation network.

[19] For more comprehensive discussion see Sections 3.1.1 and 3.1.2.

3.2 Transportation network and accessibility of the peri-urban landscape

3.2.1 Towards sustainable urban form

The transportation network is interdependent with the spatial types of settlements. Scholars and experts from different spatial disciplines have studied the urban structure and its relationship with the surrounding areas for more than a century. However, although urbanisation rarely takes place in a very orderly way, there was always a desire for a neat divide between rural and urban. As already noted, the peri-urban areas or city edges have not been given much attention by urban planners and other spatial experts. This is due to the fact that these areas have been perceived as temporal and transitional, something that will be changed in a relatively short time scale (Simon, 2008). Additionally, these areas have been given negative connotations, such as non-places and wastelands (Qviström and Saltzman, 2008) and a desire for a neat divide between rural and urban has been expressed in many models of urban growth since the industrial revolution and the start of rapid expansion of cities in the 19th century.

At the end of the 19th century one of the most notable models of urban growth appeared: a Garden City model advocated by Ebenezer Howard. It promoted areas of housing, surrounded by green open space, and separated from the industry. The Garden City model was realised in the beginning of the 20th century in several towns, e.g. in Letchworth and Welwyn, however several authors (e.g. Jane Jacobs) critiqued its low-density concept, which – alongside with the absence of public transportation links in later planning attempts based upon the garden city model – had given it a largely suburban character. However, it should be noted that Howard envisioned transportation based on public transport links, a railway system in particular. In his concept to connect garden cities with each other he actually considers a space between towns which would correspond to peri-urban. He writes (Howard, 1902, p.95): “There is, first, an inter-municipal railway, connecting all the towns of the outer ring – twenty miles in circumference – so that to get from any town to its most distant neighbour requires one to cover a distance of only ten miles, which could be accomplished in, say, twelve minutes. These trains would not stop between the towns

– means of communication for this purpose being afforded by electric tramways which traverse the high roads, of which, it will be seen, there are a number – each town being connected with every other town in the group by a direct route." Nonetheless, the Garden City predicted human settlements as self-contained clusters with static populations; this would enable the clear divide of rural urban and green belt around the urban core. However, cities are generally expected to grow, and they do not grow evenly (Wehrwein, 1942). Hence, the same critique can be applied to geographical urban growth models that started to enter the urban planning debate in the first half of the 20th century, for instance Christaller (1933), Burgess (1925), Hoyt (1939), Harris and Ullman (1945). This may be the reason that they remained on the level of synthesis schemes. Or, as Hart (1991) puts it, the complexity of the real world cannot be understood and explained in the simplicity of a model.

The relationship between the transportation network and land use in these early models is not completely clear and it may resemble the eternal chicken-and-egg question. In Christaller's model, the urban centres' distribution determines where the transportation network will be placed (Wehrwein, 1942). Similarly, White (1995), although focused on the public transport network, stressed that the pattern of land use has to be the basis for public transport provision. However, he also noted the influence of the transport network on urban form. Wehrwein (1942) on the other hand, argues that urban expansion tends to follow the transportation infrastructure. This view is supported by Forman and Alexander (1998, p.221), who state that road networks define the spatial pattern, although they mention that this has been a "[...] timeless debate in the transportation community". It can be argued that the starting point of any urban structure may be the mix of land uses, which directs the traces of transport links, but with the expansion of the city, transportation links are the directing forces. Furthermore, Wehrwein claims the railways as the first decentralisers, which enabled city-dwellers to get out of the city to the peaceful countryside in a relatively short time. However, the expansion of the automobile culture, which accelerated the road transportation links from the city outwards, was recognised very early (see e.g. Wright, 1932), but experienced its boom during the urban expansion in the 1960s and 1970s. Consequently "the rural-urban fringe

became penetrated by streaks of urban land uses also radiating from the center like the spokes of a wheel" (Wehrwein, 1942, p.221). This counterurbanisation, facilitated by the road infrastructure, enabled wealthy city residents to move away from polluted cities to their edges, where they could enjoy the surrounding countryside. For this reason, as an addition to several other consequences of implemented planning policies and development strategies, the urban fringes have become a mix of large leisure facilities, shopping malls, new industries, etc.

The automobile culture was, on the other hand, confronted with a desire for sustainable development and the principles of sustainability have started to influence the urban planning concepts.[20] Approaches for the redesign and restructuring of urban places to achieve sustainability have been addressed on different spatial levels, e.g. the regional level, the city level, the community level, etc. However, there is still no agreement about the most desirable urban form in the context of sustainability (Jabareen, 2006).

3.2.2 Present approaches to (transportation) sustainability and sustainable urban form

At present, several models of urban form have been promoted in the spirit of sustainability and sustainable development. Urban containment, for example, has imposed geographical constraints on urban growth to contain sprawl and restrain urban growth. In order to direct urban growth, urban containment policies use different types of tools, like greenbelts,[21] urban growth boundaries[22] and growth

[20] The awareness of the negative or even devastating consequences of humans on the environment has started to be intensively discussed, especially in the 1960s. However, the concerns about humans' treatment of the environment, which were indicated for example in Rachel Carson's seminal work Silent nature (1962), and have later on impulsed the establishment of environmental movements, have been in terms of sustainability and sustainable development formally addressed only in 1987 by Bruntland Commission and have been widely adopted and started to be promoted across disciplines after The United Nations Conference on Sustainable Development (UNCSD) in Rio de Janeiro in 1992.

[21] Greenbelts are a spatial technique for containment. A greenbelt usually refers to a band drawn fairly tightly around a city or urban region. It is planned to be permanent, or at least very difficult to change. Greenbelts are areas of preserved open space, or areas of significantly reduced development, designed as buffers to protect areas of land or water resources from development impact (Jabareen, 2006).

management[23] (Jabareen, 2006). Transit-oriented development (TOD) promotes a compact, mixed-use community with the transit station and the civic and public spaces that surround it. However, the critique of this approach identifies a gap between the concept of this approach and its implementation in regards to densities, which are often not much higher than conventional suburban development. Furthermore, in practice, this kind of development is also critiqued for insufficient integration of public transport, mixed uses, and other ingredients that could make them fundamentally more sustainable (Beatley, 2000, in Jabareen, 2006).

Wheeler (2003) describes a 'sustainable' city as compact, efficient in land use, with reductions in automobile use, yet better access, protection of ecosystems, and improved equity. The *compact city* as an urban form was put forward in 1975 by two mathematicians, Dantzig and Saaty. *Compact city* is a high-density, mixed-use city, with clear (i.e. nonsprawling) boundaries, and efficient transportation systems (Jenks et al., 1996; Williams et al., 2000, both in Jabareen, 2006). "In context of the sustainability debate, the 'Compact City' has become a new, but not undisputed role model" (Williams et al., 2001, cited in Kühn, 2003, p.19), and has been strongly advocated by the European Union legislation (EC, 1990), promoted in the United Kingdom and throughout Europe (Jabareen, 2006). However, the promotion of urban compactness had started long before, e.g. in Jane Jacobs's critique of modernist planning principles, and even earlier, in Ebenezer Howard's garden city model. Although Howard's tendency was to reduce density in urban dwelling, his promotion of green belt around the city was effectively tool against sprawled development.

Taking into consideration the ways in which the spatial pattern of cities affects physical, sociological and ecological processes of the city, on the basis of the reviewed literature, and with the research purpose in mind, this thesis has adopted

[22] Urban growth boundaries (UGB) are limits on land development beyond a politically designated area – to curb sprawl, protect open space, or encourage the redevelopment of inner-city neighbourhoods (Staley, Edgens, and Mildner, 1999, in Jabareen, 2006). Usually, UGBs are designated to accommodate growth for a specified period of time (twenty to thirty years), revisited periodically, and then changed as necessary (Jabareen, 2006).

[23] Growth management is the deliberate and integrated use of the planning, regulatory, and fiscal authority of state and local governments to influence the pattern of growth and development to meet projected needs. Smart growth management programs attempt to balance growth while fulfilling economic, social, and environmental needs (Jabareen, 2006).

the compact city as a working model for the sustainable city, in order to provide a basis for empirical analysis and critique in this thesis.

3.2.3 Spatial policies and development control/active management strategies

In the discussion regarding sustainability, with particular reference to urban form and sustainability and peri-urban accessibility, strategies pertaining to spatial policies and development control play a particularly relevant role and deserve a more profound explanation.

According to Antrop (2005), accessibility is one of the major determinants of landscape change, and whether or not people can easily reach a place often defines the selection of a site. In this sense, as has already been mentioned in this thesis, extending accessibility to the places outside of the city can act as an incentive for urban sprawl. In order to curb urban sprawl and to ensure balanced development, many cities across Europe have regulated their growth through a variety of different development control strategies. Among them, the most prominent are the green belts in the United Kingdom, the green heart in the Netherlands and the 'Finger Plan' of Copenhagen in Denmark. All of these strategies are aimed at ensuring and protecting recreational access to large green spaces on the edge of the cities and, at the same time, maintain a relatively high density of built-up areas (Busck et al., 2008). Such strategies have proven to be more or less successful, however it cannot be denied that the major socio-economic changes which have taken place in recent decades have affected the nature of the interface between the rural and urban landscape.

The aim of the so-called 'Finger Plan' in Copenhagen was to concentrate urban functions like housing and public transportation, along five 'fingers' (i.e. infrastructural routes) radiating from the 'palm' (i.e. the inner city). In this way, all citizens would easily be able to access the centre of the city; whilst at the same time only having to travel a short distance in order to access open green spaces, even if they lived in the city centre. More than sixty years after the implementation of this plan, it remains in operation, although "the palm is becoming larger than intended and the fingers are swollen" (Busck et al., 2008; Swaffield and Primdahl, 2006).

A Finger Plan can be considered as a partial star-shape development[24] which highlights the role of accessibility and infrastructure as drivers of urban growth. With this kind of growth, urban development can extend deep into the countryside. This means that on one hand, the infrastructural links can enable fast access to some rural settlements whilst on the other hand, those rural settlements with poorer access remain intact by the urban growth (Antrop and Van Eetvelde, 2000).

Antrop (2005, p.26) noted that areas which were not easy accessible were often perceived as stable natural landscapes. This observation reflects the fact that the planning of transportation networks has a considerable impact on the landscape surrounding the city. However, the transportation network can also be used for the creation of greenways (Viles and Rosier, 2001, in Antrop, 2005); and the 'Finger Plan' with its 'green fingers' coming into the centre can be considered as an attempt to achieve this.

The most well-known Dutch example of growth management – Green Heart – is somewhat conceptually different. The concept is based on a regional level plan, whereby a string of cities – the Randstad – form a belt around the central open green space – the Green Heart. The Randstad region is located in the western part of The Netherlands and connects several cities such as Amsterdam, Rotterdam, The Hague and Utrecht, to name the largest ones. The Green Heart covers an area of about 1500 km^2. Its green spaces are mainly used as pastured agricultural land, but it is also considered to be important because of its lakes and wetlands and its recreational use by the inhabitants of the surrounding cities. Since its establishment in 1960s the aim of the Green Heart has been to restrict the urban growth of individual cities and their merger into a single urbanised area; and simultaneously to strengthen the green functions of the Heart (Hidding and Teunissen, 2002; Kühn, 2003). To put this in context, it should be noted that Dutch spatial planning policies have been striving to ensure compact urban development since the 1960s. In addition, the policies considered in rural areas were in favour of preserving the open spaces (Hidding and

[24] This may be due to geographical constraints, since Copenhagen is surrounded by the sea on its eastern side.

Teunissen, 2002); either for the agricultural purposes or for the recreation of the Randstad residents (Kühn, 2003).

However over the course of time the gap between the spatial strategy and the actual spatial development has been recognised (Hidding and Teunissen, 2002). The main weakness of the strategy has been the protection of the Green Heart in the face of advancing urbanisation. Hidding and Teunissen (2002, p.298) claim the infrastructure (motorways and railways, etc.) are the "physical backbone of the rise of urban networks." Consequently, the rural-urban divide has turned into a rural-urban continuum. Moreover, the area has not been used to any great extent for recreational purposes. Therefore, the concept has been readdressed in order to keep the boundaries of the Green Heart more defined, and in 1998 the Green Heart was recognised as a Dutch 'National Landscape' (Kühn, 2003).

Green belt is a land use designation which is used to retain areas of largely undeveloped, wild, or agricultural land surrounding or neighbouring urban areas. The strategy has its origins in the 18th century and was promoted as an agricultural and recreational zone around the city in Howard's model of the 'Garden City' in the late 19th century. The green belt has become extremely popular, especially in the UK, as a consequence of 20th century national policy. Other European cities that have adopted a green belt strategy are Vienna, Barcelona, Budapest, Berlin, etc. (Kühn, 2003).

The main aims of this strategy are similar to those of the Green Heart, for the purposes of controlling further urban growth, to prevent the merger of neighbouring cities and to preserve the rural-urban divide. Additionally, the functions of the green belt are also to ensure open spaces with easy access for city inhabitants, and to protect natural and semi-natural environments (Jim and Chen, 2003; Kühn, 2003; Swanwick, 2002). Many cities have managed to preserve their designated areas of green belt to varying degrees. In some cases, the green belt has been contaminated with the urban fringe (e.g. large shopping malls or industrial hubs); whilst development has also occurred in a leap-frog way, whereby new settlements have

been established outside of the green belt. In this case, Kühn (2003) linked the green belt to Howard's concept of garden cities, being an over-spill element (rather than a 'stopper') to separate settlements in a city region.

On the regional scale cities are separate entities which are connected to each other via transport networks. According to Howard (1902, p.95) "The inhabitants of the one could reach the other in a few minutes, for rapid transit would be specially provided for, and this people of the two towns would in reality represent one community." In this sense, Howard predicted the advanced mobility with which we are now faced, although the new settlements, which have appeared outside of the green belt as a 'spill-over effect', now function more like suburbs than self-contained communities.

To provide further clarification of the aims of the green belt; its initial aim was to provide a good urban form (Kühn, 2003); and Howard's vision was to establish it as an agricultural belt for the provision of food for its citizens. However, social changes over previous decades have raised the demand for recreational opportunities whilst, conversely, global food production has been overtaking local production.

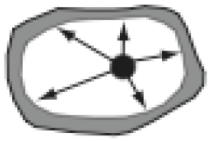
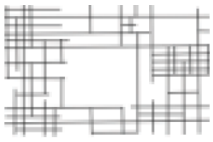
These are some of the reasons indicating why the land use patterns associated with the green belt may need to be rethought. Further research findings (Barker, 2006; Bramley et al., 2004; Pennington, 2002) have stressed that people do not actually use the green belt to any significant extent for recreation and leisure, nor to they use it in relation to sustainability issues regarding reduction in food mileage. More research is therefore needed, to clarify the uses and activities performed in green belt land, to determine the push and pull factors involved in this, and, potentially, to compare how different spatial strategies respond to these mentioned issues.

To return to a general debate on spatial and management strategies, there are a number of other strategies which can be considered as variations of those described above.[25] For example, greenways or green wedges relate to the green belt in its linear

[25] See Ahern (2005) for detailed discussion on spatial concepts for planning.

character, with the difference being that they run through an urban area instead of around it. Green infrastructure is a network of connected, high quality open spaces, which aims to provide environmental services and benefits for people and wildlife (CABE, 2008). The green infrastructure (GI) approach promotes the shift from dealing only with the accessibility and provision of green spaces to dealing with green spaces' combined function as a series of interconnected spaces, in order to achieve their multifunctionality. The green infrastructure approach to spatial planning is becoming popular, particularly in the UK. Although in the UK there is no single policy which would comprehensively address green infrastructure planning, its principles are promoted in national, regional and local policies, guidances and strategies (e.g. PPG2, PPS12, PPG17, The Glasgow and Clyde Valley Structure Plan, Natural England's *Green Infrastructure Guidance*, several reports by CABE and CIWEM, etc). The GI approach is seen particularly relevant with regard to green belt discussions as GI represents an opportunity to maximize the potential of green belt's land which is at present often criticized as being underused for recreation and leisure activities (Grant, 2010). Thus, connecting the green belt with other green spaces within the city, for example, helps in increasing physical connections and possible access routes.

Ahern (2005) summarised basic spatial concepts for planning in order to clarify and differentiate among many approaches and methods available to planning. Although his typology is far from unique, it presents a good overview that stems from the real-life examples of city forms. His typology is presented in Figure 3.4, below.

Spatial Concept	Examples & References	Metaphors & Synonyms	Diagram
Containment	• Cloister • Fortification • Greenbelt • Refuge	• Border • Barrier • Wall • Harness • Levee	
Grid	• U.S. 1785 Land Ordinance Survey • International School	• Network • Rational • Authority • Egiatarian • Anthropocentric	

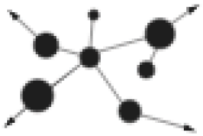
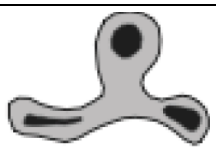
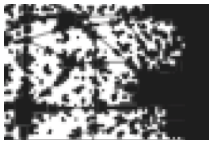
Interdigitation	• The New Exploration (MacKaye, 1962) • Pattern Language (Alexander et al., 1997) • Forman 1990a	• Harmony • Biocentric • Interdependent • Complementary	
Segregation	• Compartment Model (Odum, 1969) • Euclidian Zoning (USA) • MAB Biosphere Reserve	• Controlled • Strategic • Compromise • quid pro quo	
Network	• National Ecological Network (Netherlands) • U.S. Interstate Highway System	• Integrated • Linked • Nodes & Corridors • Stepping Stones	
Framework	• CASCO, Plan Stork (de Bruin et al., 1987) • Hydrological framework (van Buuren & Kerkstra 1993)	• Integrated Network • Topological & Chorological • Low Dynamic	
Laissez faire (defacto no strategy)	• Suburban sprawl • Megalopolis (Gottman, 1961) • Edge City (Garreau, 1991)	• Mosaic • Individualistic • Dynamic • Free-Market • Competitive	

Figure 3.4: Basic spatial concepts for landscape planning (Ahern, 2005, p.123, illus. Figure 2).

The above-mentioned spatial techniques for containment are relatively old concepts and a search for new ones has not returned any significant results. Thus more recent spatial studies, which deal with peri-urban designations have largely relied on these old concepts. For example Bart (2010) in his study pertaining to urban sprawl and transport, suggested the designation of peri-urban green areas as an efficient urban growth boundary around big cities. Bart claimed that the establishment of protected unoccupied areas around cities could serve the purpose of providing accessible green areas to people who were living in the neighbourhood. He proposed a "Finger Plan-like" development for fighting urban sprawl. Furthermore, Gallent et al. (2006, p.171) see an opportunity in the 'rural buffers', 'strategic gaps' and 'green wedges' to address more varied urban contexts, as oppose to the green belt policy which centres predominantly on larger towns. They stated: "The new tools might therefore address a wider range of rural-urban fringe settings. […] within buffers, gaps and

wedges, land is protected because of its own intrinsic qualities, and not merely because of its proximity to a town. Therefore, the new tools present an answer to the criticism that green belt policy is blind to land-quality isuess and merely conserves for conservation's sake: the new local tools are based on a strategy of appropriate protection." As previously discussed, the GI approach, linking spatial planning with functional thinking, has also increasingly gained attention from scholars and planners. For example, connecting linear habitats such as greenways may create opportunities to also include footpaths and thus encourage sustainable travel patterns (Grant, 2010). In addition, Piorr et al. (2011) suggested that, when considering spatial development in the peri-urban landscape, assigning recreational areas could work as a means for limiting urbanisation. These samples show that the newer studies still rely on the older concepts, but they suggest different (and/or new but "green") land uses of the open space.

There is no easy solution to the problems of urban growth in terms of where and how to enable or prevent accessibility to areas outside of the city and which land use patterns to prevent and promote. All of the aforementioned strategies have their own strengths and weaknesses. Besides which, there is an abundance of other factors to be considered, such as geographical features and economical and social conditions, etc.

In consideration of the future development of these peri-urban areas, spatial policies and management strategies represent a key element for maintaining a balance between built and open spaces and for the preservation of green, open and highly qualitative peri-urban green space. Churchill described this illustratively: "The traffic planner who takes traffic counts and then recommends a series of street widenings and lights and intersection remodelings is like a doctor who takes bloodcounts and then recommends an old-fashioned bleeding as a remedy for arteriosclerosis. Solution must be by way of complete diagnosis: railroads, markets, docks, airports, congested areas, and recreational areas must be brought into some kind of proper relation with each other, the lines of future growth plotted, and controls put into effect" (Churchill, 1945, p.94).

However, some references have pointed out that the policies in regards to green space provision would appear not to take into consideration the different needs of people for qualitative green open spaces (Claassen and Buijs, 2006, in Aalbers et al., 2009). Therefore the importance of enabling (access to) qualitative green open spaces for people is discussed later on in this thesis.

3.2.4 Transport – mobility – accessibility

On the basis of the discussion on urban development theories in the previous section, it can be claimed that urban development is shaped by the interaction of both land use and transport systems. However prior to further discussion on this issue, it is important to clarify the meanings of transport, mobility and accessibility on a conceptual level.

In this thesis **transport** is defined as "a system enabling travel" and **mobility** as "use made of that system to access spatially disperse opportunities" (Silva, 2008, p.16). However accessibility is a more difficult term to define. In the literature, there are many definitions, which have been provided for accessibility. The generic definition of **accessibility** is "the ease with which people can reach desired activity sites, such as those offering employment, shopping, medical care or recreation" (Gregory et al., 2009, p.2). Similarly, Lynch (1981, p.118-19) defined access as "the ability to reach other persons, activities, resources, services, information, or places, including the quantity and diversity of elements that can be reached." Recurrently, more or less the same definition has been used by authors, whose research has mainly focused on physical accessibility (refer to Bertolini et al., 2005; Bhat et al., 2000; Geertman and Van Eck, 1995; Geurs and van Eck, 2001; Smith and Halden, 2005).

Apart from the physical level, accessibility can be addressed in respect of the visual or symbolic level. According to Carr et al. (1992, p.138), visual access (visibility of space) referred to people's judgement of space before they entered it and symbolic access was concerned with different cues/symbols, which could have been either inviting or threatening, whilst physical access was related to the physical availability of space to the public. However, this thesis is solely concerned with physical

accessibility. Thus it explores accessibility as the link between transport systems and land use patterns, as opposed to the mobility concepts, which are purely focused on transport systems (Bhat et al., 2000; Curtis and Scheurer, 2010). Namely, in recent years, there has been a shift from 'planning for mobility' towards 'planning for accessibility' in city planning policies (Cervero, 1997; Vigar, 2002, in Curtis and Scheurer, 2010).

Handy and Niemeier (1997) found the accessibility measures as a useful framework for the comparison of accessibility levels of different users to different places. Accordingly, a brief overview of the current theories on the accessibility measures, in this section, provides a framework for the empirical part of this research.

In the literature, there is no agreement on one best approach to measure accessibility. This is predominantly due to the different aims which are can be achieved with the measures. However, several in-depth reviews on the accessibility measures can be found in the literature (Bhat et al., 2000; Curtis and Scheurer, 2010; Geurs and van Eck, 2001; Halden et al., 2000; Handy and Niemeier, 1997; Hull et al., 2012). Thus, this section provides a brief overview only, of the measures, most relevant to this research.

In general, accessibility measures encompass the land use **component** (i.e. the spatial distribution of activities) and the transport component, which is related to the performance of transport systems and the infrastructure network (Handy and Niemeier, 1997). It can be measured by travel distance, time, or cost.

Geurs and van Eck (2001) included also the temporal and individual components to the abovementioned two. The temporal component is related to the time constraints which individuals experience in their activity patterns and the availability of activities at different times of the day, week, or year. The individual component is concerned with the needs, abilities and opportunities of individuals, which all relate to the socio-economic and demographic characteristics of individuals. However, they note that, in practice, applied accessibility measures concentrate only on one (and

rarely more) components of accessibility due to the level of complexity which increases with the number of components used in the measure.

Furthermore, Geurs and van Eck (2001) identified four **types of accessibility measures**, however, the accessibility measures, relevant for this thesis, are grouped into (Geurs and van Eck, 2001; Silva, 2008, p.52):[26]

- Activity-based accessibility measures, considering the availability of opportunities to satisfy individual needs, their spatial distribution and the impedance of travel (e.g. distance measures, contour measures, potential measures, inverse balancing factor, measures derived from time-space geography);
- Utility-based accessibility measures, considering the utility theory and measuring the benefits individuals may derive from the land use and transport system.

The main advantages and disadvantages of all above listed measures are summarised in Table 3.1, below (Silva, 2008, p.57).

Measure	Advantages	Disadvantages
Distance measure	• Very simple • Easy to understand and communicate • Data readily available	• Only usable for one (known) origin or destination • No distance decay • No competition effects • No individual disaggregation*
Contour measures	• Easy to understand and communicate • Data readily available	• Arbitrary selection of accessibility boundaries (cut-offs) • No distance decay • No competition effects • No individual disaggregation*
Potential measures	• Easy to communicate (less than contour measures because of decay function) • Modest data requirements	• Distance decay function chosen has significant influence on the accessibility measurement • No competition effects • No individual disaggregation*
Inverse balancing factor	• Accounts for competition	• Not easily understood or

[26] The accessibility measures are in this thesis primarily reviewed for the purpose of the Structural Accessibility Layer, developed by Cecilia Silva (see Chapter Three for details).

	effects	communicated • No individual disaggregation*
Derived from time-space geography	• High disaggregation (individual-based measure)	• Requires large amounts of data • No competition effects
Utility-based accessibility measures	• Sound theoretical basis • High disaggregation (individual-based)	• Not easily understood or communicated • It is difficult to compare different utility functions
Note: *Although disaggregation can be introduced by using socio-economic groups.		

Table 3.1: Main advantages and disadvantages of accessibility measures (Silva, 2008, p.57, Table 3.1).

On the **operational level**, several other choices need to be made, beside the accessibility components and type. On the basis of previous studies, Silva (2008, p.60) summarised them into:

- The definition of study areas boundaries;
- The definition of sub-regions or nodes in the study area (region) working as origin and/or destination points;
- The detail and disaggregation of data and of resulting accessibility measures;
- The measurement of attractiveness of opportunities and of travel impedance.

To sum up, the accessibility measure is based on the choices of components, the type and the choices on the operational level. All choices depend on the objectives sought but Silva (2008) stresses the use of at least land use and transport components, whilst the individual and temporal components are optional, since more components used increase the complexity of the measure, as mentioned earlier.

3.2.5 Accessibility and sustainable planning

Urban mobility has been undergoing major changes in recent years. The increase in distances being travelled and their increasing levels of frequency has been contributing to environmental and social problems such as urban pollution, congestion and social inequity, etc. Scheurer (2008) has observed that many cities have set, in their strategies, sustainability targets and objectives, but these are often very generalised and do not present a firm basis for policy making for a specific

location, preferred mode of transport, etc. Similarly, Steg and Gifford (2005, p.60) criticised the definition of sustainable transport as aiming to find a proper balance between environmental, social and economic qualities whilst it has not been specified exactly what these environmental, social and economic qualities are. Steg and Gifford (2005) acknowledge that there have been various attempts to define sustainable transport indicators to encompass all the above-mentioned qualities, but a key set of those indicators is still nonexistent. An additional issue, according to Steg and Gifford (2005) is that the assessment of sustainable transportation often lacks rigorous social indicators. This is due to insufficient knowledge and specific methods, tools and techniques to undertake an assessment, although human needs and values should also be taken into account, in planning sustainable transport.

Human needs and values which are reflected in their travel patterns are especially relevant in leisure related journeys. In many urban regions, an increasing number of journeys being made for the purposes of leisure have been recorded, whilst commuting has represented less than half of all journeys (Silva, 2008). However, leisure related journeys are mainly undertaken by car and the travel patterns of these journeys have been increasing and have become more complex. Namely, recreation is significantly more unpredictable than, for example, activities such as work and school, which are tight in terms of place and time, and consequently they can result in travel patterns at a constant level of frequency. In order to capture this lack of 'rhythmical' travel patterns, transportation and urban planners have increasingly looked towards descriptive tools and explanations utilised in the behavioural sciences (Herbert and Thomas, 1997). The behavioural sciences offer tools and methods which may be appropriate to specify social indicators for sustainable transportation. In this sense, this thesis recognises a need to specifically investigate the reasons where, how, and why people travel, in order to create a basis for more sustainable travel.

In general, the success of a sustainable transport system lies in behavioural and technological changes. The former promote the use of transport means other than car, whilst the latter aim at reducing the car emissions which, however, does not solve

problems such as urban sprawl (Steg and Gifford, 2005). However, the literature has recognised that people are more willing to accept technological solutions than behavioural changes since the latter are perceived as more demanding in terms of travel time or decreasing comfort. Nonetheless, people in general are aware that technological solutions will not solve the problems caused by increasing volumes of car use (Steg and Gifford, 2005). Alternative transport systems should thus be considered, which better respond to sustainability aims and are also acceptable from the social perspective.

All in all, there is a general consensus that, within sustainable cities, the majority of the transport system should be based on individuals who are travelling by foot, bike or public transport (refer to Banister, 1992; Gehl, 2010; Haughton and Hunter, 1994; Simon, 2008). Accordingly, this thesis recognises sustainable accessibility in walking, cycling or the use of public transport, as opposed to the use of cars. However, the current accessibility of peripheral land uses (e.g. out-of-own shopping centres and country parks, etc.) is barely possible by any other means other than that of the car. Looking specifically at leisure and recreational travelling, the role of public transportation has been recognised as minimal (Thomson, 1978).

It could be argued that better accessibility is unsustainable as it requires increased travel. However this is only the case if that travel is unsustainable. The example for this comes from the empirical evidence provided by of Pinho, Silva and Reis (Pinho et al., 2010b). The authors compared the travel patterns within two cities, Copenhagen and Oporto, and found that more sustainable travel patterns did not necessarily mean less mobility.[27]

Another way of achieving more sustainable accessibility is to reduce travel needs by bringing services closer to people's homes. Consequently, high accessibility is achieved with little need for movement. Since the focus of this thesis is accessibility of places situated on the edge of the city by inner-city inhabitants, this will not be discussed further.

[27] The mobility (measured in terms of length of travel) in Copenhagen was higher than in Oporto but was more sustainable because of the use of non-motorised modes of transport.

This thesis is specifically interested in accessibility to peri-urban green spaces. Much research, to-date, has inspected the relationship between green space types/attributes and accessibility factors, however, no agreement has been made on how they mutually influence each other. Some empirical findings from various researchers, on the relationship between accessibility and the use of peri-urban green spaces are discussed in following sections.

3.2.6 Importance of the accessibility and the extensiveness of peri-urban open spaces for their use

The provision of good access has generally been proven to be one of the most (if not the most) important conditions for the use of green spaces. In relation to the use of the peri-urban landscape, two characteristics of access should be considered: the distance to open space (proximity) and the ease of access.

Research which has indicated the importance of people having easy access to natural-like green spaces close to their homes, has been found to be abundant (e.g. Frumkin, 2001; Kaplan and Kaplan, 1989; Schroeder, 1988; Swanwick, 2009). Furthermore, from a large number of studies it would appear clear that the shorter the distance to open green spaces, the more often people use them (e.g. Coombes et al., 2010; Neuvonen et al., 2007; Swanwick, 2009; Van Herzele et al., 2005). Moreover, having to travel too far a distance has been one of the main reasons for not using green spaces (e.g. Tyrväinen et al., 2007).

There is less agreement regarding the maximum distance that people are willing to travel in order to access green spaces. According to Van Herzele et al. (2005) this depended on the attributes of the recreational space, for instance its size. The size in relation to the frequency of visits has also been stressed as an important factor by Schipperijn et al. (2010). The same authors noted the drop in daily visitors to the green spaces by half if the green space was located more than 100 meters away from their home. Interestingly, the findings from the same study pointed out that a high percentage of respondents did not use their nearest green space. However, due to the limitation of their empirical research, the reasons for this were not discussed further.

On the operational level, the guidelines regarding the distance types of various green spaces vary from city to city. The recommendations by municipalities are usually based on the walking distance to these green spaces. For example in Sweden, the recommendations given by the Nordic Council of Ministries, regarding the maximum walking distance to recreation areas for daily use, are that they should be 250-300 metres, but that areas which are provided for weekend and vacation use may be located further away (Nordisk Ministerrad, 1996, in Neuvonen et al., 2007).

This recommendation is in accordance with the so-called compensation theory, which suggests that people choose fewer, but longer visits if the green space is further away; and more, but shorter visits if the green space is close by. The time spent in the green space is thus equal (Schipperijn et al., 2010). Several empirical studies have confirmed this theory. For example, a study by Visschedijk (1987, 1988, in Van Herzele et al., 2005) focused on comparing the size of the forests on the fringe of the city in relation to the frequency of their recreational use. The findings indicated that smaller forests a short distance from home were more frequently used for shorter walks, but that larger forests, located further away were less frequently used but were preferred for longer walks.

Schipperijn et al. (2010) discovered that green spaces needed to be at least 5 hectares to attract visitors to go past a smaller green space which was located within closer proximity. However, this was not the case if the green space was located more than 600 metres away from the resident's home.

Table 3.2 summarises several research findings on the distance and the size of different green space types.

	DISTANCE/ catchment OF GREEN SPACE	SIZE OF GREEN SPACE	GREEN SPACE TYPE	SOURCE
Walking	3-5 min	N/A	Urban park	(Kaplan and Kaplan, 1989); (Comedia/Demos,1995; Godbey et al., 1992; both in Ward Thompson, 2002)
	5 min/300 m max	2 ha	Natural green space	(Harrison et al., 1995)

	5 min	2 ha min	Woodland	(Tyrväinen et al., 2007)
	10 min/400 m	N/A	Green space	(Burgess et al., 1988)
	300 m; 2 km; 5 km; 10 km	2 ha; 20 ha; 100 ha; 500 ha	N/A	ANGSt recommends (Natural England, 2010)
	13 min	N/A	Recreation site	(Neuvonen et al., 2007)
Cycling	Half an hour	N/A	Open country	(Alexander, 1977)
Public transport	5 min	450 m max	Max walking distance to/from the bus stop	(Herbert and Thomas, 1997)
Car	N/A	N/A	N/A	
N/A	2500 to 8000 m max	100 to 600 ha min	Peri-urban greenspace (including woodlands)	(Van Herzele et al., 2000; in Van Herzele et al., 2005)
	5 km max	200 ha	Peri-urban green space, Woodland	(Van Herzele et al., 2004; in Van Herzele et al., 2005)
	50 m max; 300 m max; 1000 m max	N/A	Urban green space: 3-4x weekly; 2.7x; once a week	(Neuvonen et al., 2007)

Table 3.2: A summary of various research findings on the green space attributes in relation to cut-off values of travelling to the site by different means of transport (Source: Author's own).

Table 3.2 clearly illustrates that people would be prepared to travel (walk) relatively short distances to access some kind of open space. Of course there are certain factors, which could impede the proposed travel distances, for example the characteristics of the manner in which to get there, the type and quality of the green space and the speed of travelling which could be linked to different means of transport. The latter presents an opportunity for this research since travel from the inner parts of the city to the peri-urban green open spaces needs to be balanced with the proximity and ease of travel. When comparing different means of transport for leisure and recreation, recent research has shown that the majority of trips to peri-urban green spaces have been undertaken by car. For instance, according to the English Leisure Visits Survey (Natural England, 2006), 20% of leisure visits were to the countryside and 2% were to the coast; more than 50% of the surveyed sample travelled there by car.

In general policies follow trends and many have taken into consideration an increased access to peri-urban open spaces for sport and recreation. There are several

issues to consider in relation to facilitating access to these spaces, one of which is the possibility of enhanced conflicts between different users in the landscape. Semm and Palang (2010) pointed out two main types of conflicts with regards to the enhanced accessibility of the landscape for recreation. The first type was the conflict between the users themselves, e.g. between walkers and cyclists; whilst the second type was the conflict between users and environmentalists, since some recreational activities may have presented a threat to the natural balance.

The second issue, which is considered to be more relevant to this research topic, is related to whether the access to such large green spaces on the edge of cities is by any other transportation means than cars. The consequences of this not occurring may be a car-dominant society and social exclusion of certain groups and communities (Lucas et al., 2001; Taylor et al., 2009). However, there has been some action taken in order to prevent this situation. Thus many cities across Europe have framed their local transport and spatial policies within the concept of social inclusiveness. According to Van Herzele (2005, p.178): "'social inclusiveness' is a neologism expressing the willingness to recognise and acknowledge the distinct and diverse needs and abilities of people." However, several studies have stressed the gap between spatial policies and the actual use of these peri-urban areas (Cadieux, 2008; Qviström and Saltzman, 2006). For example, in general the peri-urban areas are perceived as having been abandoned and derelict whilst, conversely, they have also been perceived as areas of great importance for biodiversity and recreation (Forman, 2008; Qviström and Saltzman, 2008; Van Herzele and Wiedemann, 2003). Considering that activities which people perform in the landscape reflect their needs, it can be argued that the 'diverse needs and abilities' of people have not been recognised in the local policies to any significant extent.

Semm and Palang (2010, p.11) stressed the importance of everyday landscapes, since "the everyday landscape is the stand, where the re-shaping of the meaning of accessibility takes place." The same authors also underlined the communication with the people – users of the landscape – in order to consider all activities. However, providing equal access to open space for all stakeholders would be impossible, and

therefore the meaning of their activities has to be prioritised (Semm and Palang, 2010).

From the discussion above it is clear that the research varies on to what extent people use peri-urban green spaces, what kind of spaces they use and what are the factors affecting it. It is necessary, therefore, to further explore the characteristics of peri-urban space uses and people's preferred spatial attributes and, what their relevance is with regard to the accessibility of peri-urban green spaces. This is discussed in the next section.

3.3 People's perceptions and use of the peri-urban landscape

In the past few decades it has been widely recognised that there has been an increase of leisure time in Europe. Consequently, the demand of space for recreation and leisure has in many cities exceeded the capacity of existing open spaces. Additionally, the provision of green spaces alongside urban growth is necessary for ensuring the (peri-urban) citizens' quality of life. There is a large body of literature that stresses the importance of *extensive* green open spaces for the quality of life in cities, especially for outdoor recreation opportunities, being close to nature, for relaxation from stress, and for aesthetic experiences (see Bonaiuto et al., 2002; Chiesura, 2004, both cited in Tyrväinen et al., 2007). Tyrväinen et al. (2007) reported, from their empirical research in eastern Helsinki, that over 80% of local residents thought that green areas made a very important contribution to the quality of the environment. Also, Neuvonen et al. (2007) showed that a good provision of easy accessible green spaces has increased the number of recreational activities by Helsinki inhabitants. Another interesting finding of the same authors is that an increase in the number of indoor sports venues like swimming halls, or sports fields and playgrounds, has not reduced the number of recreational visits to the nearby forest. This indicates the importance of extensive semi-natural areas for close-to-home recreation. In this context, undefined spaces of peri-urban landscape represent an opportunity for cities to ensure this open space for recreational use in the future. However, there is relatively little academic evidence which is focused specifically on

the recreational and leisure use of peri-urban landscape, and particularly on the peri-urban landscapes in transition.

Recent studies have been focused on the importance of *established* green spaces around the cities for people and on people's preferences for these areas. It has been found that people appreciate the existing cultural and natural or natural-like areas, such as woodlands, fringe forests, country parks, protected areas, etc., more than built-up parks with lawns and tree plantations; of which the former are mainly used for recreation and leisure activities (Neuvonen et al., 2007; Swanwick, 2009; Tyrväinen et al., 2007). Evidence from an empirical study (Swanwick, 2009, p.S66) draws on the importance of the 'natural' landscape for the mental health of the people; participants in this research referred to 'natural' landscape as "a means of escaping their daily lives, achieving a sense of freedom, giving them a release and otherwise contributing to stress relief." Also the research from Päivänen (1996, in Neuvonen et al., 2007) pointed out the natural environment and a feeling of spaciousness is what people value in the areas on the edge of the city. In another study, Ipsos MORI on Landscapes in Britain (Ipsos MORI, 2004) showed that being able to visit the countryside from time to time is very important for the majority of British people. Another important finding from this research is that "people value country areas and parks close to where they live, and which they can enjoy every day more than they value spectacular landscapes such as the Peak District or Lake District" (Ipsos MORI, 2004).[28]

Accordingly, the main attribute of the large areas on the edge of the city is the combination of accessibility (proximity), and quality and quantity (extensiveness) of green space, which is convenient for the recreational and leisure purposes of city dwellers (Cadieux, 2008; Tyrväinen et al., 2007). Alexander (1977, p.22) wrote: "People feel comfortable when they have access to the countryside, experience of open fields, and agriculture, access to wild plants and birds and animals. For this access, cities must have boundaries with the countryside near every point." However, some practical research has shown that the choice of destination and activities is also

[28] Swanwick (2009) has stressed the contestedness of these findings because of the framework within which the question was asked.

dependent on some individual factors, e.g. age, socio-economic group and past experiences, etc. Swanwick (2009) provided empirical evidence, based on a survey exploring the frequency of visiting the countryside among people in England, that those aged 45 and over were most likely to visit historical sites whereas people between 25 and 44 found the access to the countryside important but they visited it at a lesser frequency. The proximity and extensiveness of urban edge green spaces is also one of the reasons why people are attracted to moving to the urban edge, as numerous studies have shown (Cadieux, 2008; Palang et al., 2005; Swanwick, 2009; Van Herzele and Wiedemann, 2003). People that live on the urban edge frequently use and value green spaces around the towns and cities. In addition, some areas can have the same level of quality as rural landscapes and, because of their proximity to the city, be more frequently used (Swanwick, 2009).

Conversely, Shoard (2002) has argued that people are not very attracted to peri-urban areas. Moreover, they perceive them very negatively, as "interfacial" areas. Shoard has referred to peri-urban areas in general; however, this can be considered a very vague notion, since peri-urban areas can be characteristically very different. Swanwick has also provided more specific information pointing out that, in terms of aesthetic preferences, people in general dislike developed land and infrastructure and land uses for the purpose of agriculture (Swanwick, 2009). This can be linked to Thayer's concept of technophobia,[29] since the vacant land of peri-urban areas is often used as a fallow ground for new (experimental) developments like technological centres, etc. Gallent et al. (2006) state that people use fringe landscapes for three types of recreational activities: first are privately owned areas such as golf courses, football stadiums, etc.; second are publicly owned areas such as country parks and reservoirs; and third are facilities which primary purpose was not recreation, such as canals with towpaths accessible for cycling and walking, disused tram lines, derelict land used for dog-walking or fly kites, etc.

[29] According to Thayer (2002) people's social attitude to most landscapes is three-partite and consists of topophilia (i.e. love of land and nature), technophilia (i.e. affection for and dependence upon technology) and technophobia (fear of the negative side-effects of technology). See Section 3.4.1.1 for details.

This research is focused on the use and perceptions of inner-city dwellers, since the accessibility of peri-urban green spaces for recreation is for them more of an issue than for suburban dwellers with extensive green open spaces on their doorstep. Extensiveness and naturalness are the main characteristics of peri-urban open spaces that this thesis is focused on. They are explored in relation to the accessibility from the inner parts of the city. The research uses the sense of place concept to explore what inner-city dwellers' understanding of peri-urban open spaces actually is, as well as their accessibility patterns and needs and preferences for the use of peri-urban landscape.

3.4 Theoretical framework

The theories underlying this research have been drawn together to: conceptually frame the two main research interests, i.e. the investigation of social and spatial patterns of peri-urban space, and to establish the basis of a rigorous research methodology.

With regard to the social patterns, the theories have been summarised which relate to environmental psychology and human ecology that deal with the relationship between people and place, specifically people's perceptions and attitudes. With regard to spatial patterns, the focus was on the approaches to sustainable planning. The guiding principle, in establishing the theoretical framework, was the capability of theories to adapt and serve as a framework for the empirical investigation and the analysis of the data collected.

3.4.1 Social patterns – Sense of place approach

The need for people to be in touch with nature can be argued alongside the need for urban development. Whilst municipalities aim at maintaining compact cities and preservation of their perimeters as green space, people move to the edge of these cities for the very same reason, i.e. to be closer to the green spaces. The proximity of large green spaces on the edge of cities enables people to have faster access to this for their recreational and leisure purposes; whilst at the same time, they still have access to urban areas (Cadieux, 2008).

In their report on urban sprawl, the EEA recognised a number of socio-economic drivers of urban sprawl in Europe. However the report stressed that they were "rooted in the desire to realise new lifestyles in suburban environments, outside the inner city" (EEA, 2006, p.6).

It is believed that people's intrinsic desire for nature has not often been accurately taken into account in terms of urban growth policy implementation.

However, over the past few decades the evidence from research has been recurrently shown and has highlighted its importance. Often, the economic factors (such as allowing the reclassification of the green space for retail or business use) triumph over the preservation of green spaces for the use of citizens.

This thesis has therefore used concepts associated with humanistic geography and environmental psychology to create an overarching conceptual framework for the investigation of the connection between people and space. This has helped to elucidate what kind of open spaces people desire and what their attitudes are towards the peri-urban landscape.

3.4.1.1 Place theories

Kevin Lynch (1960) described environmental image as a composition of three components: practical and/or emotional meaning of the object for the observer; identity – an object's distinction from other things; and structure – the object's spatial relation to the observer and other objects. His research on how individuals perceive and navigate the urban environment has importantly influenced the field of environmental psychology.

In the discipline of environmental psychology, concepts related to the study of place are mainly multi-faceted. Canter's (1977) understanding of 'place' is a compound of three categories: activities that people may be involved in; the physical attributes of the environment and the conceptions which people hold of the behaviour in that

physical environment. Punter (1991, in Carmona et al., 2003) drew on Canter's ideas and linked sense of place with urban design (Figure 3.5).

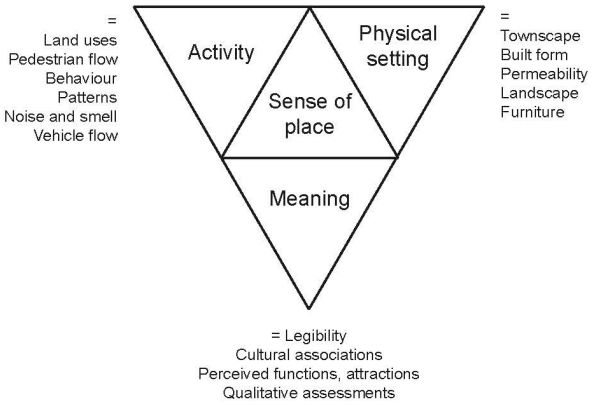


Figure 3.5: Punter's (1991) urban design theory on how urban design actions can enhance sense of place (Carmona et al., 2003, p.99, illus., Figure 5.7).

Similarly, Sixsmith (1986) studied the meaning of *home* and identified the personal, social and physical dimensions associated with it. Jorgensen and Stedman (2001) argued that sense of place is best conceived as a multidimensional construct involving affective, cognitive and behavioural components. Based on attitude theory, they proposed attitudinal components of sense of place: beliefs about the relationship between self and place (the cognitive component); feelings towards the place (the affective component) and behavioural exclusivity of the place compared with alternatives (the behavioural component). In order to examine the meanings of landscape, Thayer (Swaffield, 2002) built a three-dimensional model of perceptual, functional and symbolic dimensions, which are reflected in human relationships to landscape as in technophilia (affection for and dependence upon technology); topophilia (love of land and nature) and technophobia (fear of the negative side-effects of technology). His model, however, is primarily related to the landscapes with a considerable change because of a development of new (technological) uses. The latter could be to some extent linked to peri-urban landscape since the peri-urban landscape is in general recognised as a landscape with a lost sense of place.

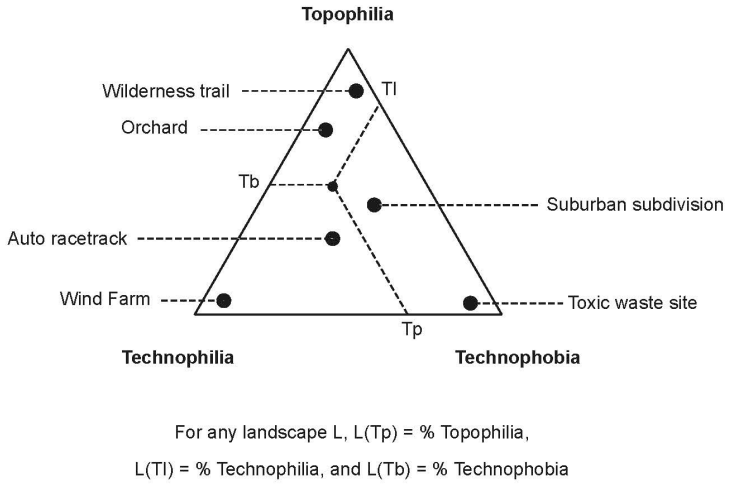


Figure 3.6: Topophilia, Technophilia, Technophobia: three attitudes toward technology and landscape (Thayer, 2002, p.106, illus., Figure 9).

From the phenomenological perspective, there is a difference between place and landscape. Thus landscape refers to the physical setting, and is a mixture of natural and cultural elements to be analysed; whereas place represents a context of experience (Soini et al., 2012). An alternative approach would be to look at place and landscape as inseparable entities. However, this may only be a useful approach for the study of the landscape as a dwelling place. For this particular study the phenomenological approach has been deemed to be more suitable.

In this thesis, *place* is defined as a result of *space* and *meaning*. Furthermore, in the study of people-place relationship, three major components are identified. These are:

- The physical characteristics of the environment;
- The meanings including attitude, perceptions, preferences, memories and associations;
- The activities afforded by the place (individual and social interactions).

The physical characteristics of the peri-urban landscape have been already discussed in Section 3.1 and will be re-addressed in the empirical part of the study. The activities afforded by the place (peri-urban landscape specifically) are discussed in Section 3.3. The peri-urban landscape is a mix of very different areas; and

accordingly its range of use is significant. Hough's statement (Swaffield, 2002, p.210) has indicated the importance of this knowledge: "Recognising how people use different places to fulfil the practical needs of living is one of the building blocks on which a distinctive sense of place can be enhanced in the urban landscape."

The meanings of place are explored within Section 3.4.1. The section and its sub-sections cover notions related to the perceptual dimension of place in general, i.e. people's conceptions of place, such as topophilia and 'placelessness' (since 'placelessness' is a characteristic commonly associated with peri-urban landscapes). The perception of, attitudes towards and some other constructs of place are also explored. Furthermore, the components of sense of place are reviewed. These last-mentioned have been used in the environmental psychology to examine the character and strength of sense of place, hence peri-urban landscape can be uncovered through the use of components of sense of place.

3.4.1.2 A sense of place approach and components

Sense of place in general means the experience of a place, which is achieved through the use of, attentiveness to and emotions towards the place (Relph, 1976; Stokowski, 2002, in Soini et al., 2012).

In phenomenology, the concept of sense of place has been investigated in detail by human geographers Edward Relph and Yi-Fu Tuan. Relph in his seminal work 'Place and placelessness' (1976) focused on place identity, as one component of sense of place. He identified three broad dimensions of place identity: the static physical setting, the activities and the meanings. Tuan discussed the relationship between space and place, and considered "space" to be more abstract than "place": "What begins as undifferentiated space becomes place when we endow it with value" (Tuan, 1977, p.6). He has focused on the human experience with the aim of understanding the ways in which people feel and think about space. He used the term 'topophilia' (i.e. human love of place) to study emotional connections between human beings and the physical environment. However, he stressed that the threat of

unknown space for people, and accordingly sense of place, is not inherently positive, but can refer to negative feelings such as fear.

Sense of place can be considered as an overarching concept, which encompasses other concepts describing relationships between people and spatial settings (Jorgensen and Stedman, 2001). Jorgensen and Stedman (2001, p.234) have recognised several components of sense of place that appear consistently in the environmental psychology literature and that can be used to examine the character and strength of sense of place. **Place identity** is "a person's identity with relation to the physical environment by means of a complex pattern of conscious and unconscious ideas, beliefs, preferences, feelings, values, goals and behavioural tendencies and skills relevant to this environment." **Place attachment** is defined as "the positive bond that develops between a person and their environment and it explicitly contains emotional content." Finally, **place dependence** is described as the "perceived strength of association between a person and a place." It is not necessarily positive; it involves a comparison of one setting to a range of alternatives for what a person likes to do. Place dependence relates to the activities that take place in a setting and it indicates its capacity for the intended use. Deutsch et al. (2011, p.3) have introduced also a fourth component: a **place satisfaction**, which is thought of as "a person's level of satisfaction with the services, environment and needs provided for by a specific place." Place satisfaction is not often considered a core concept like the other three, but when combined with place attachment they "flesh out the social psychological dimensions of sense of place" (Stedman, 2003, p.676).

Alongside the place components, the main terms used in this thesis, should be clarified:

In a dictionary (Online Oxford Dictionaries, 2013), '**attitude**' is defined as "a settled way of thinking or feeling about someone or something, typically one that is reflected in a person's behaviour." Similarly Swanwick (2009, p.S63) defines attitude as a "deeply held mental stance."

The origins of **'preference**' are in the Latin word praeferre 'carry in front', which means "a greater liking for one alternative over another or others" (Online Oxford Dictionaries, 2013). In the case of landscape preference, Swanwick (2009, p.S63) defines it as "liking one area of land or landscape better than another."

'**Perception**' is concerned with both sensual (usually visual) responses to the landscape and the way in which people attach meaning and value to it (Swanwick, 2009). Ittelson (1978) defines 'perception' somewhat differently. He identifies four dimensions of perception: cognitive (thinking and keeping information); affective (feelings which influence our perception of the environment); interpretative (reliance on memory in interpreting information) and evaluative (values and preferences). However, the evaluative perception could also be defined as 'preference' (Rapoport, 1977). Some other authors (Neisser, 1976; Arnheim, 1969) have debated the relationship between perception and preference or perception and cognition, respectively. In this study, perception is related to direct experiences; whereas preference is associated with the valuation of the landscape.

Sense of place has been studied over the past 30 years by many academics and theorists from various perspectives. It has been used as a concept to explore various issues such as place preference, attitude of people towards landscape or public participation in decision-making.

For example, Brown and Raymond (2007) used place identity and place dependence to analyze landscape values. Recreation and aesthetic values in particular appeared to be large and consistent predictors of attachment. Cuba and Hummon (1993, in Jorgensen and Stedman, 2006) have researched the relationship between the age and sense of place. On the relationship between sense of place and the characteristics of the physical environment, several authors identified physical attributes as having a direct effect on sense of place (Prochansky et al., 1983; Stedman, 2003, both in Jorgensen and Stedman, 2006) identified physical attributes as important influences on an individual's self-concept, and determined physical characteristics as having a direct effect on sense of place.

The findings from the above-mentioned studies derive from empirical research. However, the empirical use of sense of place approach is far from substantial. For example, Soini e al. (2012, p.2) stressed the lack of empirical studies regarding the perceptions of the landscape and sense of place in the human-environment relationship within a certain site or region: "[…] how does sense of place affect the way people perceive the landscape, and vice versa, what is the role of physical or social attributes in the experience of a place, and how do they turn into landscape perceptions and management activities?"

Accordingly, this thesis sees an opportunity in the sense of place approach for exploring the relationship between the characteristics of actual places and feelings or perceptions that people hold of a place. Namely, is the peri-urban landscape in general perceived as a landscape with low recognisability and local distinctiveness or not, and what sense(s) of place does it evoke? According to Soini et al., sense of place has been widely used to explore how people bond with urban places, whereas there is much less research on how people perceive rural landscapes and in particular peri-urban ones.

3.4.2. Spatial patterns – Landscape planning approach

To investigate peri-urban spatial patterns, this thesis uses landscape planning methodological approaches. Since these approaches are framed by the principles of landscape planning, the main principles and aims of landscape planning are briefly discussed in this section.

Landscape planning aims to protect natural resources whilst trying to accommodate the needs of human uses. The International Union for Conservation of Nature and Natural Resources (IUCN) in 1971 defined landscape planning as: "a continuing process that strives to make the best use for mankind on the limited area of the earth's surface while conserving its productivity and beauty. Its aim is to reconcile the needs of competing land uses and to incorporate them into a landscape in which man's civilizations can prosper without destroying the natural and cultural resources on which societies are founded" (IUCN, 1971, p.6). As such, landscape planning

approaches are especially relevant for dealing with peri-urban areas since in these areas, competition for various uses may have a significant effect on their existent natural resources.

Furthermore, IUCN identifies a need for survey and analysis as the basis of landscape planning. The analysis has been seen as an important and significant component of the discipline of landscape planning (Marušič, 2004). The analysis combines aspects from both the natural sciences and the planning disciplines, which has enabled the development of a great variety of different methods and tools for integration of environmental objectives into development plans (Golobič and Breskvar Žaucer, 2010).

Examples of established models, which consider the study of both biophysical and socio-cultural systems are, for example the Ecological Planning Model (Steiner, 1991), the Framework Method for Landscape Planning (Steinitz, 1990), and the Framework Method for Sustainable Landscape Ecological Planning (Ahern, 1995). These methods may be adapted to implement sustainable landscape planning across a range of contexts. Hence, the concepts of these models and their functioning on the operational level have been reviewed and considered in setting the procedural framework for the spatial analysis in this thesis, which is described in Chapter Four, Section 4.3.2.

To sum up, the conceptual basis of this thesis, which underlines the empirical investigation, is in this thesis based on using the sense of place approach and landscape planning approach, to investigate the interconnection between the three components. These are the physical characteristics of the environment (i.e. accessibility and spatial attributes of peri-urban landscape), its meanings (i.e. preferences and perceptions) and the recreational and leisure activities undertaken there. Therefore, this study will use a multi-faceted theoretical model as a foundation to understand the relationship between people and the peri-urban landscape.

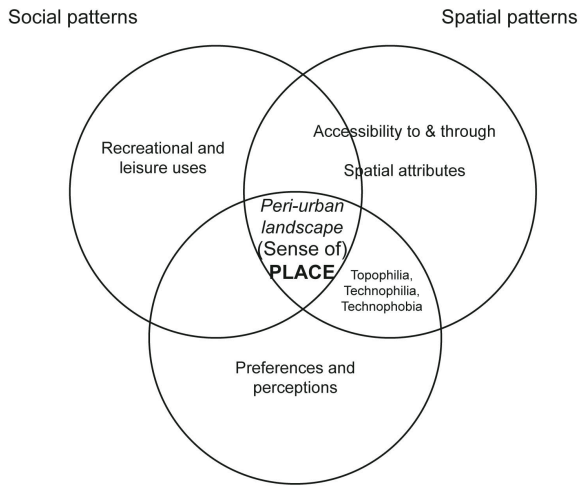


Figure 3.7: Conceptual basis of this thesis. Source: Adopted from Canter (1977) and Punter (1991).

3.5 Concluding remarks

Traditionally, spatial planners have been striving towards a clearer divide between the rural and urban setting; and the peri-urban area has been perceived as ephemeral and as a consequence has been largely ignored. The socio-economic changes which have taken place over previous decades have blurred the rural-urban divide and various land uses and activities have formed a peri-urban area between the city and countryside. Only in recent years has the peri-urban landscape and issues pertaining to it, received more attention. However, this has mostly taken place within academia and, to a lesser extent at the operational level, in local spatial policies. This thesis takes as its initial premise the view of the peri-urban landscape as a real area of distinct characteristics and represents the link, rather than a divide, between the rural and urban. Thus its linking position is seen as an opportunity for addressing issues pertaining to it, such as urban sprawl and the unsustainable accessibility of such peri-urban open spaces.

As a framework for the exploration of the use and accessibility of peri-urban open spaces, this thesis recognises the peri-urban landscape as an independent entity. However this is greatly influenced by the rural and urban processes and it is therefore transitional in its character. The peri-urban landscape is characterised by the variety of its activities, its land uses and processes. It entails areas that vary from those

which are completely natural, such as natural parks and wilderness areas to those with more rural characteristics like agricultural areas, allotments, woodlands and country parks and those with very urban land uses, for example industrial hubs, wastelands and shopping malls. Accordingly, people's uses and perceptions of this landscape can vary and some may perceive these areas as a messy and unwanted places, whilst others may appreciate them as being suitable for recreational and leisure activities.

Research has stressed the gap between local spatial policies and activities which people actually perform within the peri-urban landscape. Clearly, more knowledge is needed regarding both, people's activities as well as their perceptions of such peri-urban open spaces, in order to better understand these places and ensure a sustainable future.

In order to bridge the gap between local spatial policies, people's activities and uses of the peri-urban landscape, this thesis suggests a sense of place approach in order to learn about how people connect with these places and what kinds of peri-urban green space they actually prefer. In relation to their accessing of these peri-urban open spaces, having an understanding of their reasons for travelling to such areas is deemed essential for achieving more sustainable accessibility.

According to Halden (2000, p.2) "[…] transport planning has concentrated […] on the transport system operation, looking in great detail at movement patterns rather than giving detailed consideration of why they are travelling, and where they are going." Thus, the use of qualitative methods presents an opportunity for gaining an understanding of which peri-urban places people actually like to visit and why they choose particular means of transportation to get there.

Furthermore, more public involvement at both the qualitative and quantitative level is needed not only within transport planning but also for consideration of the future of sustainable spatial planning of these areas. The gap between the spatial policies and actual activities in the peri-urban landscape may indicate an ignorance of

people's use of the peri-urban open spaces by decision-makers within planning. In a very critical sense this can be argued as compromising people's needs and accordingly decreasing their quality of life, since numerous research studies have shown that access to green space is hugely important for people's quality of life and wellbeing. The reality may not be so harsh, but arguably we are faced with two issues: firstly, the lack of knowledge of 'what is going on in the peri-urban landscape' and, secondly, the lack of tools regarding how to implement planning policies responsive to the variety of stakeholders' needs and wishes. This thesis takes a combination of qualitative and quantitative methods as a tool for elucidating these issues. In addition, it takes into account the need for greater involvement of the public in land use and accessibility planning of these areas. Public participation is crucial for achieving greater transparency of public decision making and promoting sustainable development, because it elucidates needs and priorities of different parties. Consequently, appropriate strategies to address them could be identified and integrated into the land use plan.

Chapter 4: Research methodology

The previous chapter has uncovered the peri-urban landscape as a very ambiguous and a non-definable one for it is located between rural and urban, literally, and between nature and culture, symbolically. In particular, the chapter showed that in the research to-date, the gap in achieving a better understanding of people's perceptions and their engagement with peri-urban space has not been adequately fulfilled. This thesis aims to address this gap with positing a series of research questions (see Chapter One for details) and, in order to answer the research questions, to build the research methodology on the basis of the approach that involves both people and place. In this approach, the people component is investigated through **social patterns** within the use of, and accessibility to, peri-urban landscape. The place component is investigated through **spatial patterns** of spatial accessibility to and, spatial boundaries of peri-urban space (Figure 4.1).

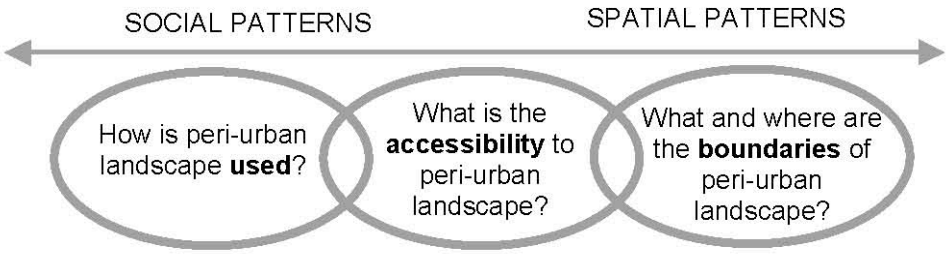


Figure 4.1: The research inquiry in relation to the research methodology (Source: Author's own).

Specifically, the two main inquiries which present the backbone for the construction of the research methodology are:

- The exploration of the peri-urban landscape as a phenomenon about which little is known (spatial patterns);
- Building an understanding about peri-urban landscape characteristics and people's values and activities which can help shape local policy initiatives (social patterns).

This thesis draws on empirical evidence which combines both enquiries into people's experiences, perceptions and actions as self-reported, and more objective evidence of land use patterns, infrastructure mapping and evidence of use. The combination of both approaches allows different views on the research phenomena to be compared and evaluated.

In particular, the empirical approach is outlined in three stages, which express three different aspects in the understanding of peri-urban landscape. Firstly, the views of (potential) users of this space are collected with specific interest in their use and perception of peri-urban landscape. Secondly, on the basis of knowledge obtained from the users or potential users, the views and perceptions of decision makers are examined and compared with the data gathered from peri-urban users and potential users. Thirdly, secondary mapped data is used to examine the character of the peri-urban landscape in order to further investigate its spatial patterns.

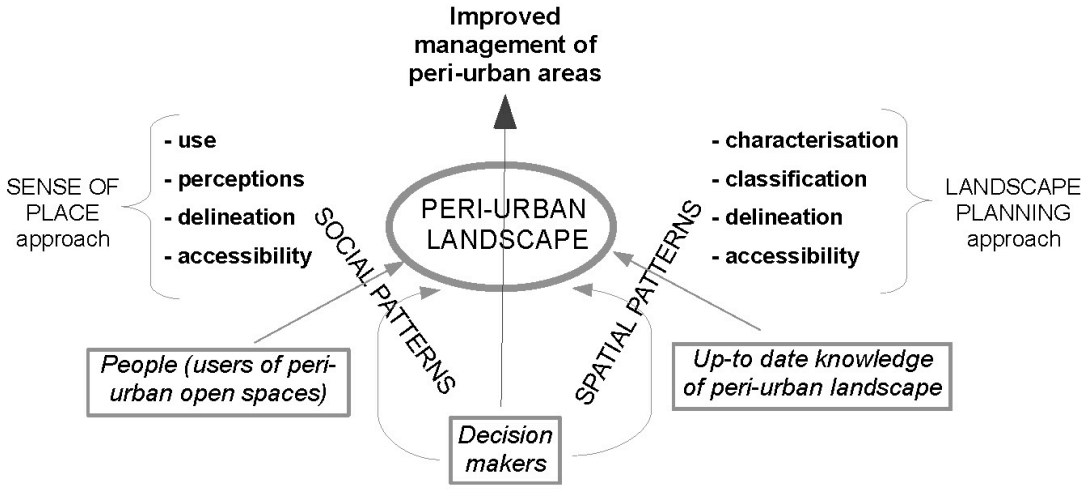


Figure 4.2: Diagram representing the research approach structure (Source: Author's own).

In the Sections 4.2-4.4, this chapter focuses on the appropriate methods of research, methods of data collection and analytical techniques to investigate social and spatial patterns, with the aim to understand the meaning for users (and potential users) of peri-urban landscapes in order to inform better planning practice. The operational

matter of research methodology, i.e. the implication of the methods and the analysis of the results are discussed later in the next four chapters.

4.1 Research procedure

Research procedure in this thesis consists of three parts: Firstly, a theoretical framework, which is developed on the basis of reviewed theories, principles and aspects. The main methodological approach in this part is the literature review. Secondly, the theoretical framework is a foundation for the guidance of the empirical part of the research – comparative case study – and the application of selected methods. The data is collected via a combination of qualitative and quantitative methods. Thirdly, in order to elucidate spatial and social patterns of peri-urban landscape, the data is analysed separately. The social patterns are analysed using statistical analyses such as factor analysis, regression, the Kruskal-Wallis Test and coding. The spatial patterns are analysed with spatial analysis techniques which are based on landscape planning principles. Finally, all of the methods are triangulated in order to cross-check the research findings and interpret the results.

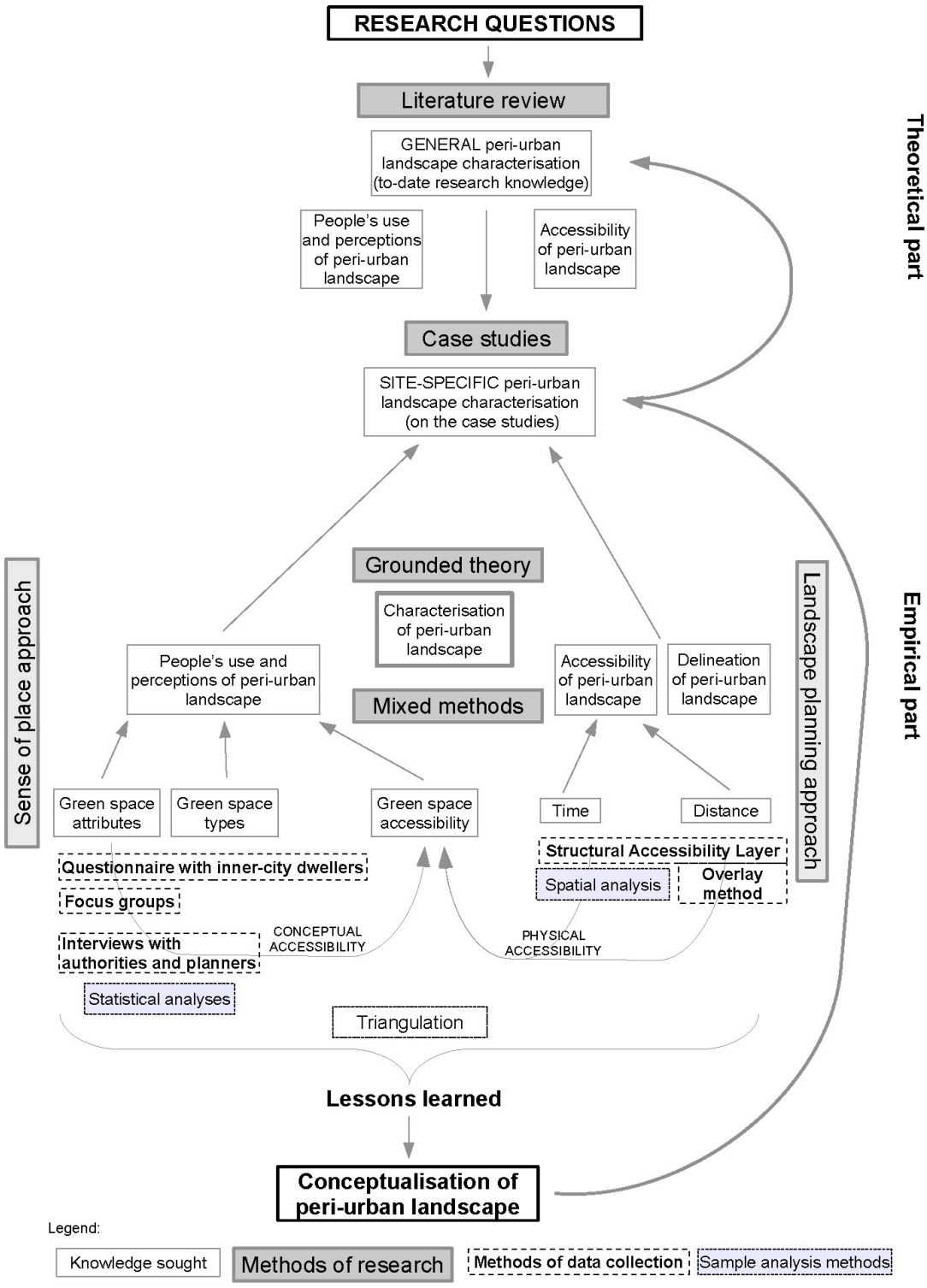


Figure 4.3: Diagram representing the research methodology and procedure (Source: Author's own).

4.2 Methods of research

Chapter Three has exposed the lack of clarity between the planning policies that might effectively address the peri-urban landscape and the perceived condition[30] of this space. Different suggestions have been made about what people's attitudes could be to this space, ranging from those claiming that people value the peri-urban landscape because of its (semi-)natural environment to those claiming that people do not value this landscape at all because it is considered as wasteland. The value of this space is closely connected with its use and accessibility. Hence, the variety of the indications on the use of, and the accessibility to, peri-urban landscape has also been recognised.

Accordingly, rather than setting out a hypothesis-led approach, this study takes a grounded theory approach to uncover concepts related to the attitude and engagement of the people who are users of peri-urban landscape, and help build an understanding of their perspectives on the conditions of the peri-urban landscape. Concepts, which Strauss and Corbin, (1998, p.101) have labelled as "the building blocks of theory", are necessary in building a framework to explain the phenomenon (i.e. peri-urban landscape). The details of a grounded theory approach are explained in Section 4.2.1.

However, the characterisation of the peri-urban landscape has not been developed using a grounded theory approach alone. The identification of the gap between planning policies and the actual state of peri-urban landscape has justified the decision for the selection of a case study approach. This has enabled building on the empirical exploration of social and spatial patterns, using a mix of qualitative and quantitative methods. The integration of both types of methods can thus generate complementary insights about the spatial and social factors influencing, being influenced by, and/or shaping the peri-urban space.

The use of mixed methods, i.e. the combination of at least one qualitative and at least one quantitative component in a research study, has been commonly employed in

[30] The 'actual condition' refers to the attitude, use and accessibility of peri-urban landscape.

case study research strategies. This can be justified by the flexibility of the mixed-method research approach and its ability to provide a broader basis for generalisation of the research findings, since the individual methods capture just a small fragment of the reality. Furthermore, the case studies employing a mixed-method approach "are particularly valuable as they allow for comparisons within cases and across time and contexts, thus offering a 'rich harvest of lessons and insights'" (Zartman, 2005, p.8 cited in Sharp et al., 2012). The overall analytical technique used to cross-check the findings deriving from both qualitative and quantitative research is triangulation, which is described more in detail in Section 4.5.

While a grounded approach has been selected to explore the 'What is going on in peri-urban landscape?' question (i.e. the exploration of social patterns), the 'How should this space be managed?' question (i.e. the exploration of spatial patterns) is related to the approaches to future planning of the peri-urban area. This thesis advocates sustainable peri-urban development in terms of seeing peri-urban landscape as a link rather than a divide between urban and rural, where nature is considered as a process rather than an object. The interconnectedness with nature is commonly considered in landscape planning principles. Thus, sustainable planning is, in this study, approached within principles of landscape planning, which has been already discussed in previous chapter (Section 3.4.2).

4.2.1 Grounded theory

Grounded theory was first introduced by Glaser and Strauss (1967), and is adopted in this research for the analysis of qualitative data, which has been derived from the focus groups and interview implementation.

Grounded theory has been defined as "theory[31] that was derived from data, systematically gathered and analysed through the research process" (Strauss and Corbin, 1998, p.12). The process in grounded theory approach closely binds the stages of data collection, analysis, and eventual theory building. Therefore, all the

[31] However, some authors have argued that grounded theory is not a theory but an approach to the generation of theory, or concepts respectively, out of data (Bryman, 2008).

stages of the process are well structured and are briefly outlined below, summarised after Bryman (2008).

The initial set of **research questions** is followed by **theoretical sampling**, "the process of data collection for generating theory whereby the analyst jointly collects, codes, and analyzes his data and decides what data to collect next and where to find them, in order to develop his theory as it emerges" (Glaser and Strauss, 1967, p.45). The **data collection** consists of two basic operations, i.e. asking questions and making comparisons. The questions asked are of four types: sensitizing questions indicate what might be the data (e.g. 'What is going on here?' and 'What is the main problem of the participants?'); theoretical questions help the researcher to elucidate the process with the aim of making comparisons among concepts (e.g. 'What would happen if...?); practical questions provide direction for sampling (e.g. 'Which concepts are well developed and which are not? And 'Is my developing theory logical?'); guiding questions are a basis for the conduct of the interviews, observations, and analyses. **Coding** begins soon after the collection of initial data. It refers to breaking down data into component parts, which are given names. **Theoretical saturation** links the data collection and coding; it refers to carrying on sampling theoretically until a category has been saturated with data. Alongside coding, the phenomena that have been coded under a certain category **are constantly compared** so that a theoretical elaboration of that category can start to emerge.

4.2.2 Case study

In the discipline of landscape architecture, Deming and Swaffield (2011) have argued in favour of the case study given that landscape is a complex phenomenon, which involves both human and biophysical relationships. Therefore, landscape cannot be easily divided into parts, appropriate for the investigation under experimental techniques. Since this research encompasses both the spatial and social context of peri-urban landscape, the case study is an appropriate methodology for operational investigation of the research phenomena. Whereas this section takes a theoretical overview of case study approach, the specifics on how case studies were used in this research, are given in Chapter Five.

"Case studies are complex multifaceted investigations into a particular place, project, organisation, or landscape" (Deming and Swaffield, 2011, p.80). This investigation of "contemporary phenomena within a real life context" (Yin, 2009, p.2) helps develop some theoretical explanation for clarifying the characteristics of larger phenomena. According to Francis (2001, p.9) "Case studies often serve to make concrete what are often generalisations or purely anecdotal information about projects and processes. They also bring to light exemplary projects and concepts worthy of replication or broader dissemination." Investigation can be based on one or multiple cases, of which the latter allows more complex analyses or comparison of the cases.

Yin (2009) has identified three types of case study depending on the type of question, the degree of control over the situation and the type of phenomenon: descriptive studies, exploratory studies, and explanatory studies. Upon this suggestion, the descriptive case study has been recognised as the main research strategy in this thesis with the focus on the investigation of middle-sized European cities. In order to gain more reliable and relevant information and provide the possibility for comparison, two cities have been selected for the case study. Edinburgh and Ljubljana are two cities of comparable size which offer an appropriate context for the in-depth investigation of the peri-urban landscape: people's use and attitudes, and accessibility relationships.[32]

The study of cases has been selected for the benefit of having the opportunity to examine 'real-life phenomena' and to compare the research interest, i.e. peri-urban landscape, in two cities. The comparison, however, may present a limitation on the use of case study method. According to Francis (2001), the problem of comparison across cases might be the inability to compare the data, if the types of collected data are different. To avoid this and to gain relevant findings that could be generalised across cases, in this research the corresponding methods have been applied to both of the cities. Figure 4.4 illustrates the research process.

[32] For a comprehensive discussion on the criteria for a selection of the case studies, and the description and comparison of both cities, see Chapter Two.

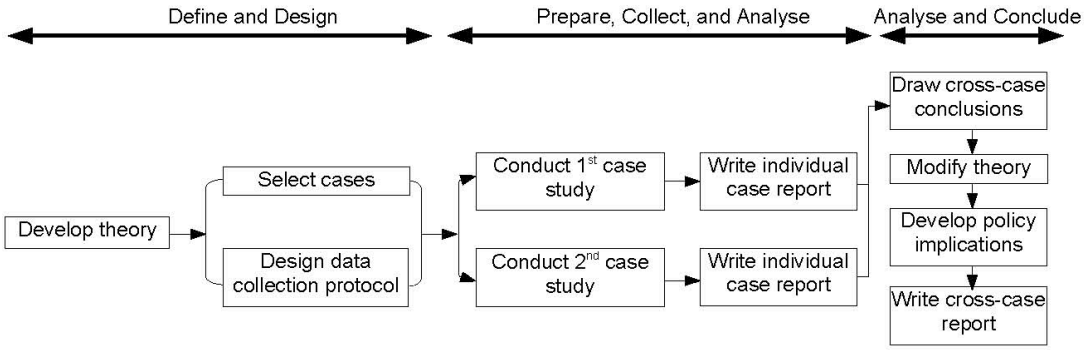


Figure 4.4: Case Study Method: The two cases are analysed through the replication approach (Yin, 2009, p.57, illus., Figure 2.5).

4.3 Methods of data collection

The range of specific methods that are possible for data collection is wide and each of them has its strengths and weaknesses. Some of most widely used methods, as found in the literature are, for example: sampling, structured interviewing, self-completion questionnaires, structured observation, participant observation, qualitative interview, focus groups, spatial analyses, etc. (for an overview of methods used in social science research and landscape architecture, see e.g. Bryman, 2008; Deming and Swaffield, 2011). The choice of appropriate methods in this research was strongly related to the research questions and the knowledge gained from the literature reviewed. Accordingly, this section discusses the methods used for this research and the specific reasons which influenced the choice of these methods. The next stage, i.e. the implementation of selected methods in two case study cities, is described in Chapter Five.

4.3.1 Social part

The possible methods of data collection planned within the social part of this research aimed, in accordance with the research questions (i.e. to find out what type of peri-urban landscape and site features inner-city dwellers are attracted to for their leisure activities and what their preferences are with regard to peri-urban spaces), to obtain the views of potential users of peri-urban spaces and of the decision makers responsible for policy and planning of such spaces (see Figure 4.2 for details).

A pilot study was used to explore the methods that could best address research sub-questions One to Four[33] in the case studies and to test the usability of the methods. The details with regard to the pilot study can be found in Appendix A.

The methods of data collection in the pilot study involved:

- carrying out semi-structured interviews at selected peri-urban open spaces with people who were then using the site;
- undertaking several field visits in order to learn about peri-urban landscape characteristics and people's behaviours there. This was achieved through on-site analysis of spatial features. In addition, during field visits participant observation was carried out, in order to gain a general knowledge of how people use peri-urban space;
- conducting spatial analyses which included land use analyses and historical analyses of landscape change.

The pilot study revealed the strength and weaknesses of the chosen methods. The main strength of the semi-structured interview appeared to be its implementation on the site in question; being in the actual environment under discussion helped respondents to provide more comprehensive answers (on the questions such as what the respondents liked about this place, why they came there, etc). However, the answers delivered through the pilot semi-structured interviews, were not as easy to analyse as had been expected and showed that the questions needed to be clearer, more direct and completely unambiguous. Therefore a closed, self-completion questionnaire was subsequently chosen as the method to obtain a general insight into how people relate to the peri-urban landscape. The data and in-depth descriptions from the pilot survey assisted in understanding what items should be included in the questionnaire; its characteristics are described in the next section (Section 4.3.1.1).

[33] Question One: What type of peri-urban landscape are inner-city dwellers attracted to for their leisure activities?
Question Two: What are their preferences with regards to the peri-urban landscape?
Question Three: What site features are they attracted to?
Question Four: How do perceptions of access by means of transport affect usage?

Direct/participant observation included as part of the field visits during piloting, showed that people, in general, prefer the observer to join them in their recreational activities, rather than purely observing them. This guided the researcher towards considering the implementation of the 'accompanied field visit' method.

An 'accompanied field visit' requires the researcher to invite a group of people from an inner-city area to take part in a tour/discussion regarding the selected peri-urban open spaces. The main intention of this method was to explore how participants have travelled to the place (which means of transportation did they use?); and the reasons for their choice. This would be followed by taking a guided tour through the site, noting the characteristics of the place, with the main attention on the likes/dislikes of spatial attributes, general impressions of the place and participants' wishes for the future development of the area.

The sites visited were originally planned to vary in their accessibility levels and spatial attributes in order to collect people's perceptions on a range of different peri-urban open spaces and explore accessibility levels to these spaces. However, due to difficulties in complying with health and safety requirements (especially with regard to neglected/abandoned/isolated peri-urban open spaces) which pertained in particular to the older age group, and difficulties in recruiting participants in general, this method had to be replaced with focus groups. Whilst the issues discussed in the focus group were the same as would be in an 'accompanied field visit', it must be accepted that being in actual peri-urban space is likely to evoke feelings which may differ from those described when information is collected in an interior space remote from the field area in question.

The semi-structured interview was selected as an appropriate method to investigate planning decisions and policy makers' attitudes towards the peri-urban landscape. In particular, the purpose of these interviews was to explore the issues regarding people's open space needs and public involvement within policy formation. According to literature, one-to-one interviewing is useful for gathering in-depth descriptions and explanations, which were the main reasons for the choice if this

method. The characteristics of semi-structured interview are in detail described in Section 4.3.1.3.

To sum up, the final methods selected for the main data collection were: questionnaires with inner-city dwellers, focus groups and interviews with representatives of authorities and planners. The characteristics of these methods are described in the following sections.

4.3.1.1 Questionnaires

In this research the main purpose of using questionnaires[34] was to elucidate: the behavioural patterns of inner-city dwellers; their use of and perceptions (with emphasis on the 'sense of place' investigation), attitudes and preferences towards the peri-urban landscape; and to identify their transportation patterns for leisure and recreational activities within this area. These main interests of the inquiry served for the structuring of the questionnaire which is in detail described in the next chapter (Section 5.1.2.1).

The closed, self-completion questionnaire was chosen over originally planned semi-structured interviews to get more reliable data for analysis and to mitigate the respondent burden (the time and effort required to think about possible answers) by listing a limited set of options for answers to questions,[35] to give the respondents more freedom in terms of choosing their own time for completion, and to reach a larger public in a shorter period of time. Additionally, since one of the aims was to learn about people's attitude towards peri-urban landscape, a questionnaire was recognised as an appropriate method to measure it. People's attitudes are not directly observable and hence a method such as a questionnaire offers a means to explore attitudes via contributory questions and clues (Balram and Dragićević, 2005).

[34] Deming and Swaffield (2011) defined the questionnaire as a formal survey instrument, structured around a standard set of questions.

[35] However, in most questions there was an 'Other' option where the respondents could write their own answer.

However, the literature has recognised some limitations of this method, such as that the respondents may have difficulties in answering questions if the latter are ambiguous, and the topic of the questionnaire may not be very important or relevant to respondents. Furthermore, additional data from the same respondents cannot easily be collected subsequently, questions may be answered only partially (e.g. because the respondents find the questions irrelevant, boring or unclear), and there is a threat of low response rate (Bryman, 2008). These threads were taken into account when designing the questionnaire layout, which is explained in the next chapter (Chapter Five, Section 5.1.2.1).

4.3.1.2 Focus groups

The focus group[36] method was used to supplement the information obtained through the questionnaire survey by drawing out in more detail the questionnaire findings on people's behavioural patterns regarding the use of, and accessibility to, peri-urban green open spaces. In particular, this method was selected because it allows the researcher "to develop an understanding about *why* people feel the way they do" and because it "offers the opportunity of allowing people to probe each other's reasons for holding a certain view. This can be more interesting than the sometimes predictable question-followed-by-answer approach of normal interviews" (Bryman, 2008, p.475). The researcher's aspiration was that the group interaction might generate data and insights that may not be uncovered without this interaction.

There are many references on how to conduct and analyse a focus group, including aspects covering the number of focus groups, number of participants in each group, the social background of participants, etc. Considering the last, Morgan (1997) argues for the homogeneity of participants in their background but not homogeneity in attitudes. Accordingly, the groups for this research were segmented by the age of participants; separate sessions with older and younger (up to thirty years old) participants were planned. Those two age groups were selected mainly because they

[36] A focus group is defined as "a form of group interview in which: there are several participants (in addition to the moderator/facilitator); there is an emphasis in the questioning on a particular fairly tightly defined topic; and the emphasis is upon interaction within the group and the joint construction of meaning" (Bryman, 2008, p.694).

belong to the social group which is generally considered to have lower access to private means of transport and accordingly there are more restraints on reaching peri-urban open space. Hence, the aim of the focus groups was to gather a qualitative account of participants' experiences on access to peri-urban open spaces, which would be helpful to explain people's perceptions and use/non use of peri-urban landscape. The operational details of the conduct of the focus groups are explained in the next chapter (Section 5.1.3).

4.3.1.3 Semi-structured interviews

The knowledge gathered on the users' attitudes and the use of peri-urban green open spaces were considered appropriate to provide good background information for exploring the institutional and regulatory side of the research issue. This applies to the authorities' and planners' view on, and knowledge of, and the possible strategies already put forward to deal with, the problems approached in this research. Additionally, the interviewees' perspective on the notion of peri-urban landscape and its (possible) spatial delineation in the case study cities was sought. The target interviewees included representatives from municipal planning departments and independent experts from selected research institutions.

The decision to use the semi-structured interview, as opposed to any other similar method, for example, the unstructured interview, was made because the semi-structured interview is an investigative tool which has very specific objectives. Bryman (2008, p.439) has suggested one should use the semi-structured interview in the following situation: "If the researcher is beginning the investigation with a fairly clear focus, rather than a very general notion of wanting to do research on a topic, it is likely that the interviews will be semi-structured ones, so that the more specific issues can be addressed." Similarly, this is also described by McCracken (1988, p.9): "The long interview is one of the most powerful methods in the qualitative armoury. For certain descriptive and analytic purposes, no instrument of inquiry is more revealing." However, in contrast with the structured interview, some freedom is given to the interviewer in terms of how objectives are to be achieved (Singleton, 1999). Since interviewing of authorities and planners in this research was planned to

be implemented after the questionnaires and focus groups had been undertaken, the focus and information sought was indeed clear and thus the semi-structured interview was selected as the most appropriate method.

4.3.2 Spatial part

The spatial part of this research includes two methods of data collection which both pertain to GIS spatial pattern analysis: overlay analysis and Structural Accessibility Layer. These methods have been used to achieve two objectives.

The first objective was to frame/delineate the peri-urban area in both case study cities. In order to achieve this objective, an overlay analysis of peri-urban open space types was carried out. The starting point for the delineation of peri-urban landscape on the empirical level in the two case studies were the general peri-urban land use types, which had initially been identified on the basis of the literature review (see Section 3.1.3). The outcome of the spatial part was then critically compared with the outcome of the social part (focus groups and interviews). Finally, the peri-urban landscape was analysed and characterised in a holistic way.

The second objective was to understand the ease of accessibility to the peri-urban open spaces. Knowledge of the causes and consequences of accessibility is particularly important when seeking to achieve an understanding of how the landscape is changing or will change in the future. Therefore, the accessibility levels were explored through a combination of data on social and spatial patterns relevant to peri-urban open spaces. Social patterns are concerned with the social, economic, cultural, and individual characteristics of the people (visitors) as factors in accessing peri-urban landscapes. In this thesis, these patterns have been mainly measured and analysed via the focus groups and questionnaire data. In parallel with the social patterns measurements, an objective measure of physical accessibility – within GIS spatial patterns analysis – was pursued in order to clarify the factors related to the influence of urban structure (i.e. land use and transport system factors). For this objective measure, the method called Structural Accessibility Layer (SAL) was used, and it is described in detailed in Section 4.3.2.2.

4.3.2.1 Delineation of peri-urban landscape: Overlay method

An attempt to delineate peri-urban landscape in the two case studies was carried out for several reasons. Firstly, to challenge the question of whether the delineation of peri-urban landscape is possible at all, especially when considering the large variety of peri-urban land uses, the individual case (city) morphological characteristics, economical and cultural processes, etc. Secondly, it has been undertaken to visually and conceptually compare the outcome of the spatial procedure with the social findings. Thirdly, it was used to explore the possibility of whether spatially defined and non ambiguous peri-urban space would form a better spatial framework for planning and development of these areas. Finally, delineation on the case study cities has been attempted for purely operational reasons in order to make the spatial analysis of peri-urban landscape in the case studies easier.

For the process of delineation and consequently conceptualisation of peri-urban landscape in both case studies, a new integrative overlay method has been proposed in this thesis. The delineation was carried out in a two-step process: in the first step, the main general peri-urban land use types were identified on the basis of the literature review (see Section 3.1.3 for details on this procedure). In the second step, the overlay method was used to delineate the peri-urban landscape in both of the case studies.

In principle, the overlay method attaches values to thematic data (land cover, soil type, etc.) that represent a measure of the ability of that condition to accommodate a particular use. Multiple data layers are then overlaid and their overlapping values are calculated. The results demonstrate the most desirable locations for the concerned use. The overlay method has a long tradition in site analysis. One of the earliest descriptions of this method was written by Ian McHarg in his seminal book Design With Nature (1971), and it has become particularly popular with the development of GIS (Geographical Information System) and the availability of digital maps.

The justification of using an overlay method to delineate the peri-urban area in the case studies lies mainly in the nature of the peri-urban landscape. Namely, the

landscape characterisation approach is preferably used to classify landscapes where the components such as land use and geomorphology can be clearly linked to more complex patterns such as a field system (Antrop and Van Eetvelde, 2009).[37] Since peri-urban landscape is recognised as ambiguous and vague, the overlay method is deemed appropriate for its spatial delineation.

The overlay method is guided by absolute rationalism, which may be considered as its strength since anyone with the same data and the same method can achieve the same conclusion. However, its shortcoming is that the qualitative aspects, for instance human experience, are not included in this process (Antrop and Van Eetvelde, 2009). In this study, this shortcoming has been mitigated by adding the findings from the qualitative part of the study (i.e. the investigation of human attitudes to and perceptions of peri-urban landscape) to the final conceptualisation of the peri-urban landscape.

4.3.2.2 Accessibility of peri-urban landscape: Structural Accessibility Layer

The Structural Accessibility Layer method was primarily chosen as an objective measure of accessibility to compare against respondents' subjective perceptions and subsequently to address the research question of 'How do perceptions of access by means of transport affect usage?' In order to answer this question, and to explore possibilities for enabling more sustainable access to green spaces, factors influencing travel behaviour and accessibility levels of spaces need to be discovered.

The research field concerned with the study of factors which underlie travel behaviour is vast, and the number of aspects which should be considered is constantly growing (Pinho et al., 2010a). However, among the array of factors, land use, transport, and individual aspects are acknowledged as having the major influence on travel behaviour (Pinho et al., 2010a). In line with the general aim of this thesis to investigate both social and spatial patterns of peri-urban landscape, a

[37] Antrop and Van Eetvelde (2009) would consider this approach as a "holistic approach" and Deming and Swaffield (2011) would consider it as a "landscape approach". However, they both derive from the characterisation of the landscape method, which is based on the grouping of landscape units with similar features (Swanwick, 2002).

twofold methodology has been developed to explore these factors. Hence, individual aspects have been addressed within social patterns (which were explored via the focus groups and the questionnaire) whereas the land use and transport system have been addressed within spatial patterns (which were explored via GIS spatial pattern analysis) (Figure 4.5).

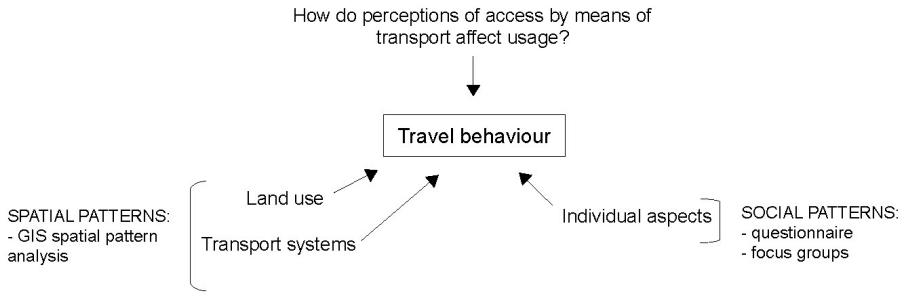


Figure 4.5: Factors influencing travel behaviour (Source: Author's own).

Accordingly, the approach used for measuring the factors related to the land use and the transport system, was to create a *Structural Accessibility Layer* (SAL); "a geographical representation of comparative accessibility levels by types of transport modes to different types of opportunities generating travel" (Silva, 2008, p.70). This is a tool that "measures the extent to which the urban systems provide the necessary conditions to enable sustainable mobility patterns" (Silva, 2008, p.69). The SAL operates on the basis of measures, which require a number of choices on the operational level. These choices pertain to, for instance, the level of spatial disaggregation of the analysis, the disaggregation of activities, etc. (see Figure 3.6 for an overview).

In this thesis, the creation of a SAL has been used to investigate the ease of accessibility by four different modes of travel from the city centre to peri-urban green open spaces in each city. The transport modes considered were: a car (CAR), public transport modes (PT) and within non-motorized modes a bicycle (NMc) and walking (NMw). For each transport mode, the choices made with regard to the measures considered the specific travel time in relation to a particular peri-urban green space and the frequency of travelling to a peri-urban green space. The comparison of accessibility levels by different transport modes then enabled the

evaluation of the sustainability of potential travel patterns (with regard to transport mode and distance). All operational details of the SAL implementation in both case studies are discussed in Chapter Four.

I. Method

SAL is given its originality by the three basic aspects of this tool (see Figure 4.6), which are (Silva, 2008, p.70):

- the production of **geographically represented** (GIS based) results of accessibility levels (fundamental to provide a global view of the territory in analysis and of variations of accessibility conditions throughout the study region);[38]
- the use of **accessibility measures**[39] (fundamental to reveal the link between urban structure and the potential mobility patterns in both the analysis and the design support purpose of the SAL);
- and the comparison of accessibility values by transport mode, defining the **sustainability measure** (fundamental to measure the potential of urban structure to enable sustainable travel behaviour).[40]

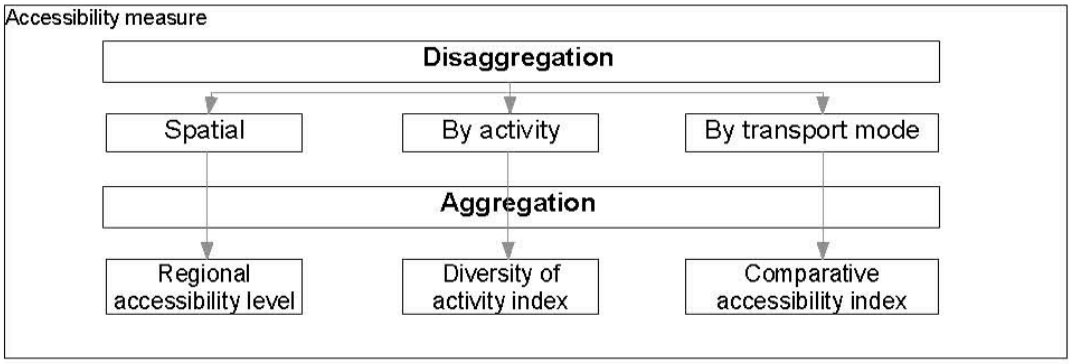


Figure 4.6: Representation of the conceptual choices made in the development of the SAL (Silva, 2008, p.80, illus., Figure 4.4).

[38] In this thesis, this has resulted in a series of maps (see Figures 8.12-8.15 and 8.17-8.21).
[39] For a theoretical overview on the accessibility measures, see Section 3.2.4.
[40] This measure culminates in the production of a map synthesizing land use and transport constaints on potential mobility (Silva, 2008, p.86). In this thesis, this has resulted in a production of the following maps: Figure 8.16 and 8.22.

In this research, two main indices were used to measure the accessibility enabled/disabled by the land use and by the transport system conditions: the *diversity of activity index* of potential destination (the accessibility measure) and the *comparative accessibility index* of different transport modes to reach those destinations (the sustainable measure). These two measures were used in order to understand the local accessibility within the case study area, hence the need for disaggregated data. However, since the accessibility by some modes of transport, e.g. a car, can easily extend to a regional level, the accessibility of sub-areas within the case study area was assessed on a wider, city-region scale. The theoretical definitions of both indices are described in the following paragraphs.

II. The accessibility measure

The accessibility measure is associated with a distance dimension. It counts how many activities (out of all considered activities) can be accessed according to pre-defined distance and time limitations (Silva, 2008). It is measured for each origin of travel and for each transport mode considered (e.g. a private car, public transport and non-motorized modes). The number of accessible activities by each transport mode is assessed by a GIS-based technology (see Figure 4.7 for a schematic overview).

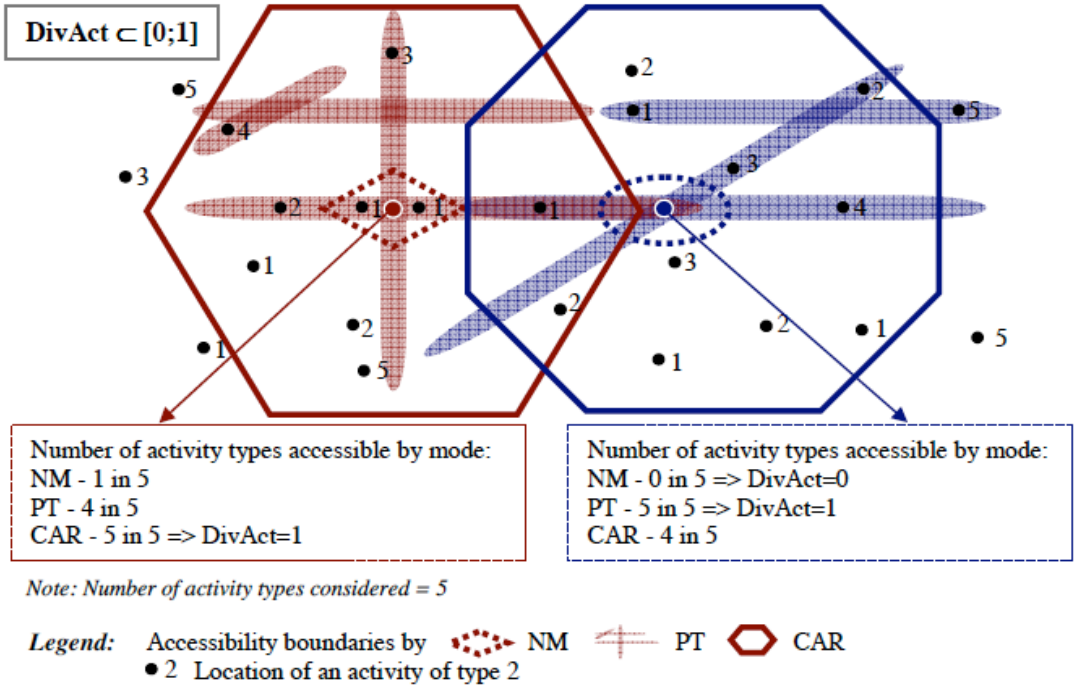


Figure 4.7: Accessibility boundaries by transport mode drawn for two example origin points (Silva, 2008, p.78, illus., Figure 4.3).

Then, an aggregate measure of accessibility to several activity types for each location and for each transport mode is produced. The general index of this measure is:

$$DivAct = \frac{\sum_y (Act_y * f_y)}{\sum_y f_y}$$

y = activity type

Act_y = a value representing the existence or not of the activity type y inside accessibility boundaries ($Act_y \in \{0; 1\}$)
(It is considered that people choose the closest destination among the same activity type.)

0 (none of the activities is accessible) ---------- 1 (all considered activities are accessible)

f_y = the potential frequency of use of the activity type

In this index, the potential use frequency of an activity is related to the accessibility to each activity. Accordingly, the activity types that are more frequently accessed provide higher values of diversity of activities than the activity types that are less frequently accessed. This index thus provides an average of the number of activity

types that are accessible, weighted by the potential use frequency. Results of this index range from zero to one (Silva, 2008).

The overall data needed for the diversity of activity index calculation are as follows (Pinho et al., 2010b):

→ Statistical data (at census track): Population; Employment; Activities by type;
→ Geographical data: Transport infrastructure; Mobility system service level (information such as frequency of transport service, driving speed, etc).

Additionally, several case-specific choices may be considered for use in the diversity of activity index. These include the choices regarding:

- study area boundaries;
- level of spatial disaggregation;
- level of disaggregation by activities;
- potential frequency of use (f_y);
- cut-off criteria and values (e.g. time, cost, convenience, etc.)

In this research, all of the listed choices were used in both case studies. They are further discussed in Chapter Five.

III. The sustainability measure

On the basis of accessibility measures disaggregated by transport mode, the accessibility levels between the modes can be compared. This is assessed by the comparative accessibility index. This index uncovers first, how land use and transport conditions enable or disable the use of particular transport modes, and second, how urban structure constrains mode choice.

The accessibility levels for each transport mode are divided into three accessibility classes:

- class A: high accessibility;
- class B: medium accessibility;

–class C: low accessibility.

Division of accessibility classes vary from 0 to 1 and are another case-specific choice and are discussed in detail in the next chapter (Chapter Five).

The three different accessibility level possibilities for three different modes of transport provide a sum of 27 potential combinations of accessibility values. These present *accessibility categories*, which are grouped into 9 *accessibility clusters* "defining different levels of sustainability of potential mobility (regarding mode choice and distance) enabled by land use and transport conditions" (Silva, 2008, p.83). The clusters are labelled from I to IX; all the possible combinations are represented in Figure 4.8, below.

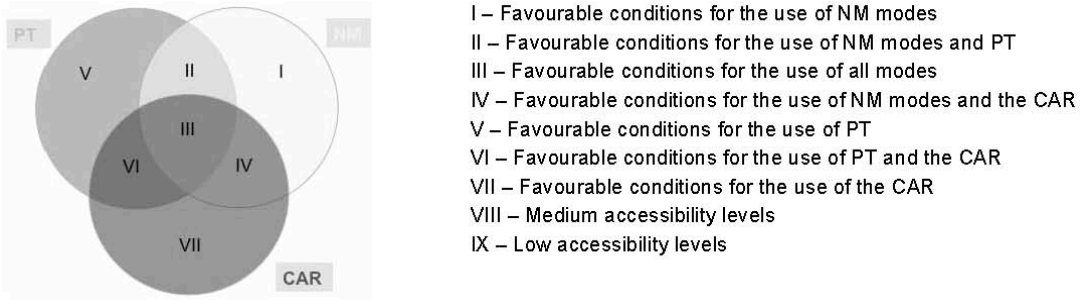


Figure 4.8: The accessibility clusters for the three modes of transport (Silva, 2008, p.5, illus.).

For this research, SAL provided an objective measure of accessibility levels, which could then be compared and triangulated with the findings gained from the qualitative methods (focus groups, interviews). Another reason for selecting SAL as a tool to investigate the accessibility levels was that it is designed for the local scale within city-region scale, which is a more appropriate scale to analyse peri-urban areas/accessibility, as opposed to tools which have been more widely used for the site/neighbourhood level, such as Space syntax, Spatial Integration Accessibility, PTALS models and similar (for an overview on accessibility instruments see Hull et al., 2012). Furthermore, in terms of accessibility to peri-urban areas, urban structure is regarded as a constraint rather than an influence, and it is highly adaptable to local conditions (Silva, 2008) and therefore appropriate for the case study implementation.

4.4 Sample analysis methods

The analysis of the data collected was led by techniques specific to each method of data collection used: for the analysis of the social part of the research (i.e. the questionnaire, focus groups and interviews) statistical methods such as factor analysis, regression and open coding were used. The spatial part of the research (i.e. the overlay analysis and the SAL) was led by the spatial analysis procedure. Then, the findings were compared in interpreting the results, which is described in Section 4.5.

4.4.1 Statistical analyses

All three social data collection methods of social part were analysed separately for each case study city. The results were then compared and discussed.

The questionnaire data was analysed using the statistics package, SPSS version 20. A detailed account of the method of analysis is provided in Chapter Six. For the purpose of detailed data analysis, the data was coded and transformed into a number of different types of variables: categorical, ordinal and interval. Then, several statistical tests were carried out, in order to get the best information to answer the research questions.

I. Descriptive analyses

The descriptive analyses were carried out to obtain an initial overview of respondents' socio-demographic characteristics such as gender, age, education, etc. since one of this research's aims was to examine the impact of demographic differences between the respondents on their use of, preference for, and accessibility to, peri-urban green spaces. Additional analysis of the questionnaire data by age group was undertaken to address an initial assumption of this research, i.e. that younger and older people might be socially segregated in accessing peri-urban open spaces. As discussed in Chapter One, this assumption was grounded in the fact that the accessibility of peri-urban areas is in general based on private car use and on the assumption that people of these two age groups are more restricted in access to car

transport. Accordingly, their perspectives, opinions and statistical facts needed to be explored in more detail in order to address this assumption.

II. A Chi-square Test, Mann-Whitney U Test and Kruskal-Wallis Test

These three different, non-parametric statistical tests were used to test the existence of statistically significant associations or correlations between different combinations of variables. In accordance with the research interest, there were essentially three types of independent variables used: the demographic variables, the variables related to the accessibility of peri-urban green spaces (e.g. having a car, a bicycle, etc.) and the variables related to preferences in peri-urban green spaces use.

The value of these tests was two-fold: first, the statistical significance found between the combinations of variables helped to address the research questions directly and, second, any statistical significance found between the variables was then used for regression analysis which is discussed below.

The choice of which particular statistical test to use to for any given combination of variables was made according to functions of the tests (see Table 3.1). **The Chi-square Test** compares the unequal distribution of cases in a frequency table (usually the distribution of observed data with data one would expect to obtain according to a hypothesis) or crosstabulation of two nominal variables. **The Mann-Whitney U Test** compares the mean values of two samples where the first sample consists of the two categories of the nominal variable and the second of cases according to the ordinal or interval variables. **The Kruskal-Wallis Test** differs from the Mann-Whitney U Test in the first sample since it can consist in three or more categories of the nominal variable.

III. Factor analysis and Binary regression

Factor analysis is a type of exploratory multivariate analysis which can be used for two reasons: either to reduce the number of variables or to look for possible relationships among variables (Introduction to SAS, 2013). In this research, factor analysis was used for the first reason, aiming to identify factors which underlaid the

variables. The variables (statements used in the questionnaire to explore respondents' sense of place) were taken from the research previously conducted by different authors. The factors that emerged from the analysis in this research could be then compared with the factors identified in previous research. Accordingly, the usefulness, clarity and accuracy of the statements used in the questionnaire could be assessed.

Binary logistic regression analysis can be used for predicting the outcome of a categorical dependent variable. It measures the relationship between a binary dependent variable and one or more independent variables (the predictors). In this research, binary logistic regression was used to predict respondents' use of peri-urban open spaces. The operational details of this analysis are described in Section 6.2.3.

Number of dependent variables	Nature of independent variable	Nature of dependent variable(s)	Test used
1	No levels, Categorical	Categorical	Chi-square
1	Categorical	Ordinal, Interval	Mann-Whitney
1	Categorical	Ordinal, Interval	Kruskal-Wallis
1	Binary, Categorical, Interval	Binary	Binary logistic regression
2+	No levels	Interval	Factor analysis

Table 4.1: Statistical tests used on variable combinations (Adopted from:, Introduction to SAS, 2013)

IV. Open coding

Open coding was used to analyse the focus groups in order to answer the questions related to people's perception and attitude towards peri-urban landscape. Open coding was defined by Strauss and Corbin (1990, cited in Bryman, 2008, p.543) as "the process of breaking down, examining, comparing, conceptualizing and categorizing data." Open coding was carried out in order to identify key concepts which were later grouped into categories. Grouping concepts into categories – or

conceptualising – is a step of theory building, which is the final aim of this grounded approach.

For this research, conceptualising is especially significant because of its procedure of comparing and connecting the concepts of the focus group findings across the two case studies. Coding and categorising the findings, connecting, and analysing them can clarify possible variations ranging from significantly different patterns to some (unexpected) similarities between the participants of the two case study places. Both similarities and differences are meaningful in the explanation and elucidation of the research phenomena. However, in order to avoid possible bias because of the researcher's awareness of relevant theories and concepts in the discipline, the final outcome of the focus groups analysis was compared with the findings of other research methods and the research questions were, in the final stage, approached via the triangulation of several research methods.

4.4.2 Spatial analysis

Spatial analysis encompasses the procedure and techniques that objectively describe and/or assess landscape. The phases of spatial analysis may vary according to the approach used, the information sought, and the scale applied.

On the operational level, spatial analysis is guided by the landscape planning procedure, which conventionally consists of the following four steps: (1) Classification; (2) Evaluation; (3) Interpretation, (4) Modelling.

In this particular research, spatial analysis steps were used to assess the data collected within the spatial part of the research, i.e. the data gained with the overlay analysis and the SAL. The main aim of the assessment was to achieve an understanding of those processes which shape the peri-urban landscape structure. The framework for the analysis was based on the landscape planning approaches, which were discussed in Chapter Three, Section 3.4.2.

4.5 Robustness of data collection and analysis – triangulation

Triangulation was the analytical interpretation used to confirm the robustness of data collection and analysis. Specifically, triangulation was employed for the following two purposes.

Firstly, it represented a validity check; the combination of qualitative and quantitative methods was used for a corroboration and illustration of research findings between them. In other words, this concept represented "checking the validity of an interpretation based on a single source of data by recourse to at least one further source that is of a strategically different type" (e.g., postal questionnaire data may be used to check the data derived from the unstructured interview) (Hammersley, 2008, p.23).

According to Hammersley (2008, p.23), the idea behind this use of triangulation is that "by drawing data from sources that have very different potential threads to validity it is possible to reduce the chances of reaching false conclusions. For example, it might be argued that the tendency for people to give researchers socially desirable rather than honest responses is greater in face-to-face interviews than in anonymous postal questionnaires; so that, in this respect, the latter can be used to check the validity of conclusions drawn on the basis of the former kind of data." However, Bryman (2008) has stressed that the findings may not be possible to corroborate. There are several approaches to treat any inconsistency in results. One is to take one set of results as definitive: Newby (1977, p.127 cited in Bryman, 2008), for example, discussed the inconsistency of his survey and participant observation, where he "instinctively trusted the latter." Hammersley (2008, p.23) proposed the re-examination of the data and, moreover, he stressed that "discrepancy will usually indicate a need for further investigation involving yet other sources of data, chosen to counter the effects of specific threats to validity."

The second purpose of employing triangulation was to obtain different views of the same phenomenon, with the aim to compare and contrast these different views. In this sense, Erzberger and Kelle (cited in Hammersley, 2008, p.27) have written: "the

use of different methods to investigate a certain domain of social reality can be compared with the examination of a physical object from two different viewpoints or angles. Both viewpoints provide different pictures of this object that might not be useful to validate each other but that might yield a fuller and more complete picture of the phenomenon concerned if brought together."

Finally, Hammersley (2008, p.27) emphasises the compatibility of both concepts, i.e. checking other sources of information both for the purposes of validating one's initial interpretation and to provide complementary data: "Indeed, gaining further information about a phenomenon, through drawing on multiple sources of data, could lead us to change the category into which we originally placed it, on the grounds that it no longer looks like an X but appears to be a Y. Here, while the purpose for which the new data were collected was gaining complementary information, what has resulted in a correction of the initial interpretation, one that is analogous to what may occur in triangulation for checking validity. This reflects the fact that this third interpretation, like the first,[41] assumes a single reality."

The use of both triangulation concepts for the purpose of analysing the findings from different methods, in order to answer the research questions, is illustrated in the sequence of diagrams below (Figures 4.9-4.13). It is apparent that the clear distinction between the two concepts of triangulation is not possible in the analytical process of research data. There is a certain amount of overlapping and new, additional information is sought in parallel and validated. For example, focus groups were used to check the conclusions reached on the basis of the questionnaire. At the same time, the data collected from the focus group may contribute additional information, which could help answer the research question.

I. Research sub-question One: What type of peri-urban landscape are inner-city dwellers attracted to for their leisure activities?

In order to answer this question, questionnaire and focus groups were employed to search for the required information. Since focus groups are largely limited to self-

[41] The first interpretation refers to triangulation as validity checking and third interpretation refers to triangulation as seeking complementary information (author's note).

reported data (Morgan, 1997) and the self-administered questionnaire can result in selective question answering, analysis of secondary collected data, which is in general popular for its objectivity and transparency, and objective information acquired from the interviewees, was used to help address this question.

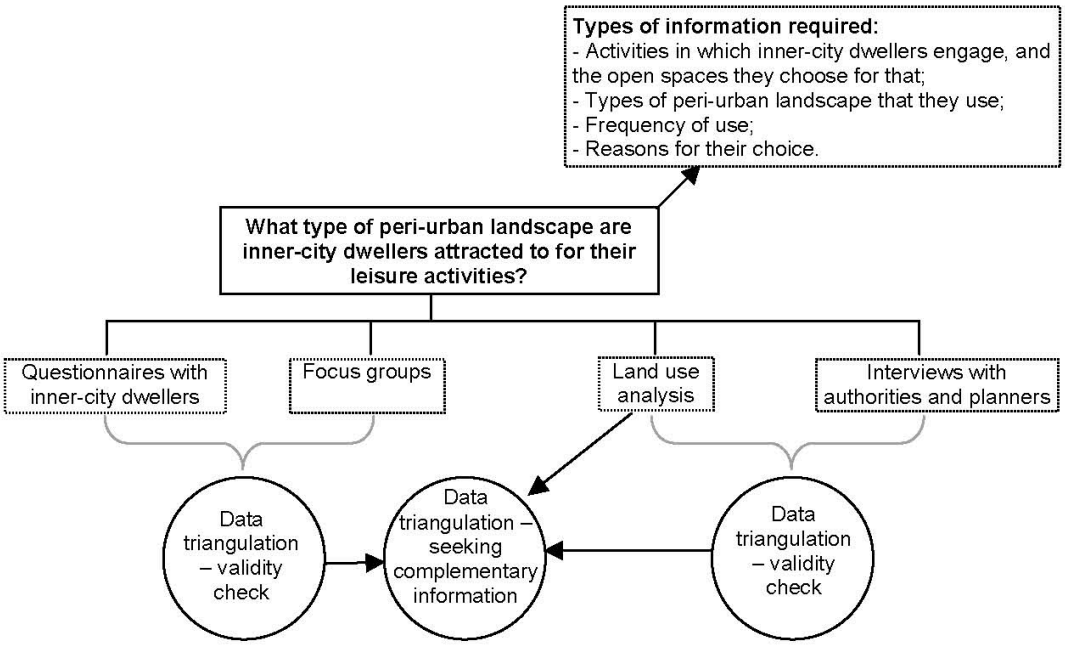


Figure 4.9: Research sub-question One.

II. Research sub-question Two: What are their preferences with regards to the peri-urban landscape?

The preferences and attitudes were mainly explored through the questionnaire. Based on questionnaire findings, additional, more in-depth information was sought in the conduct of the focus groups.

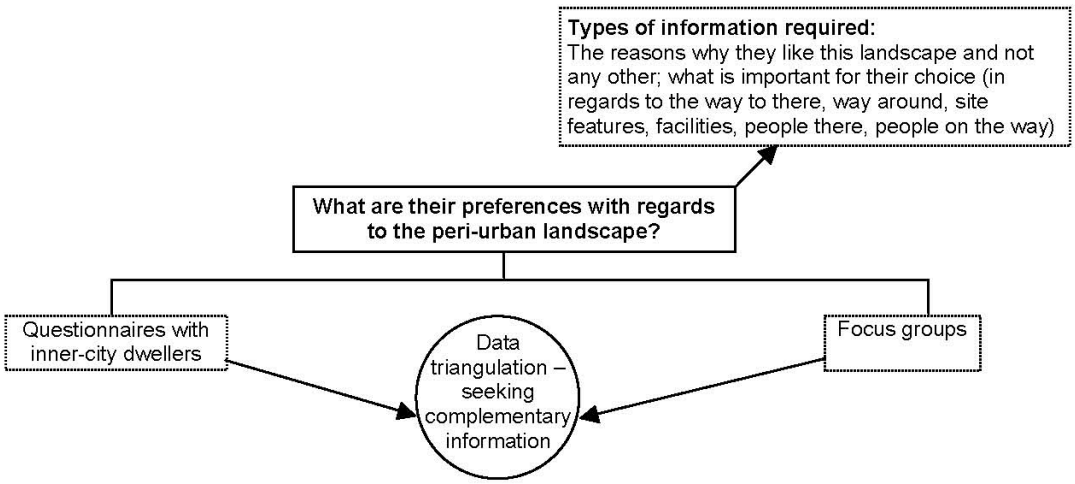


Figure 4.10: Research sub-question Two.

III. Research sub-question Three: What site features are they attracted to?

This research question was closely related to people's preferences regarding peri-urban landscape, hence it was explored with the same methods as the previous one. Additionally, the findings were complemented with the land use analysis, which showed the delineated uses for specific places in the local land use plan.

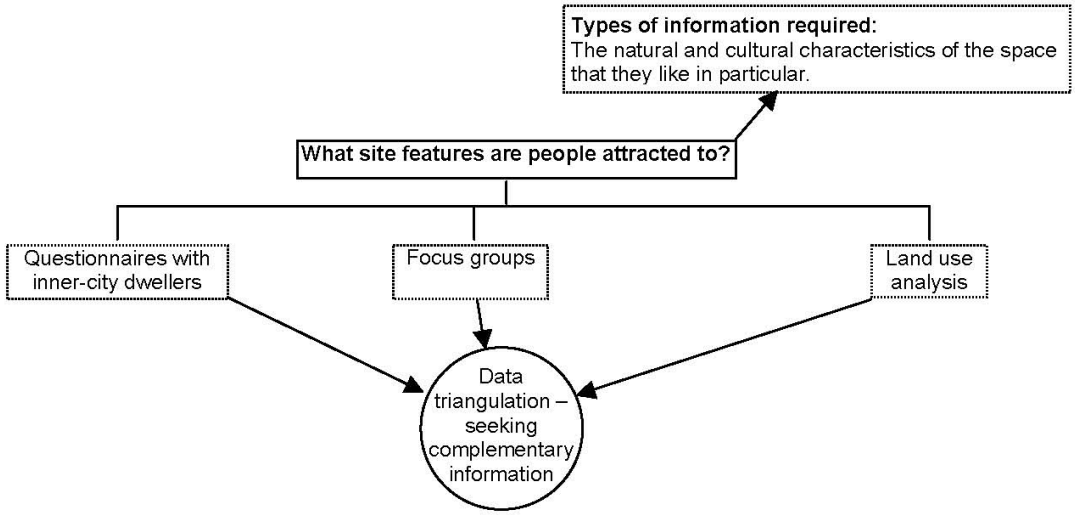


Figure 4.11: Research sub-question Three.

IV. Research sub-question Four: How do perceptions of access by means of transport affect usage?

Because of its complex nature (i.e. the variety of different stakeholders' views, opinions and experiences on the accessibility), this research question was addressed using several methods, connecting them and comparing the findings in the process to identify the real-life situation and general concerns, in order to elucidate cross-case patterns of use and accessibility of this space.

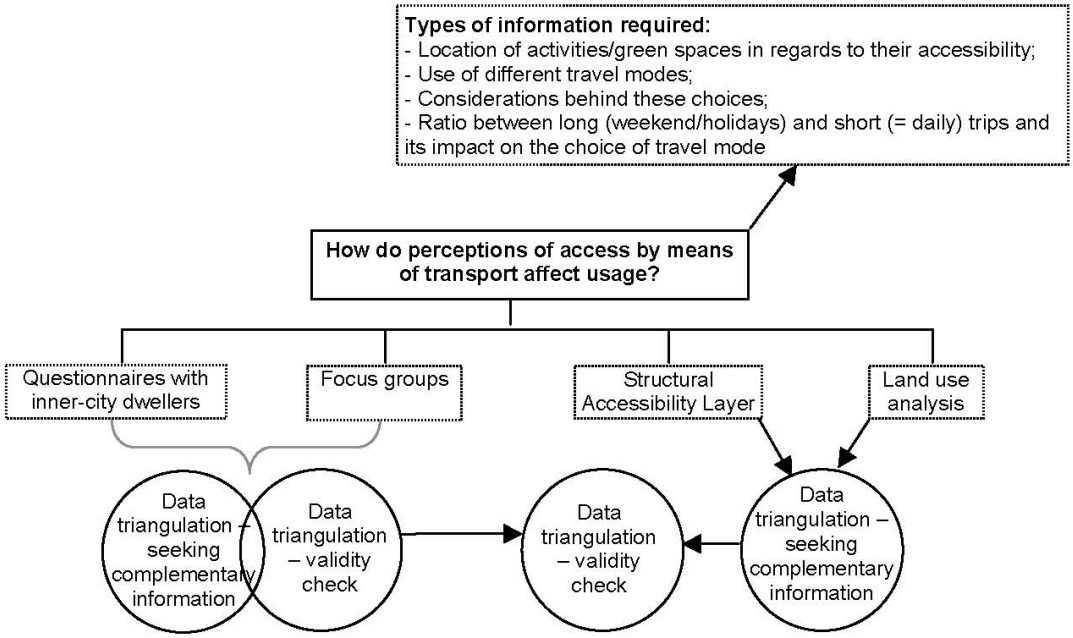


Figure 4.12: Research sub-question Four.

V. Research sub-question Five: How do current spatial planning and transportation policies match with inner-city dwellers' wishes and preferences for peri-urban landscape use? How do the policies enable or create barriers to the accessibility of the peri-urban landscape?

This research question drew from the outcome of the first three research questions (presented in Figures 4.9, 4.10 and 4.11). It confronted the different stakeholders' views, particularly the ones from the people (users and potential users) and authorities, in order to contribute to the research goal of providing guidelines for future management of these areas.

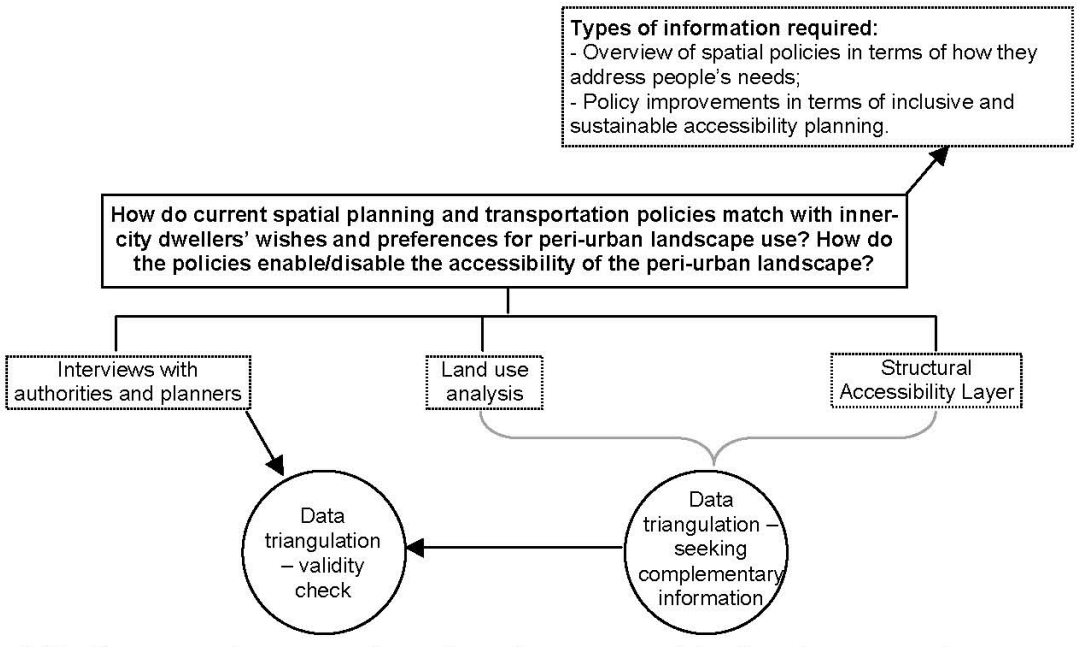


Figure 4.13: Research sub-question Five.

The triangulation of the empirical part of the research and thus answering of all five research sub-questions provided a ground for addressing the main research question (i.e. 'How can the knowledge of inner-city dwellers' perceptions and uses of peri-urban green spaces contribute to more effective management strategies for this space?'). In order to address this question, the knowledge gained with the empirical investigation reflected back on the theoretical framework. The research objectives were subsequently reviewed and an appropriate approach, in order to meet the requirements of future planning interventions in sustainable accessibility of the peri-urban landscape, has been proposed.

3.6 Key conclusions

This chapter has defined the research approach that investigated the peri-urban landscape through its socio-spatial patterns. An understanding of social patterns, which encompass people's perceptions, attitude and use of peri-urban landscape, was recognised as crucial to understand the spatial patterns of activities (i.e. land use), which are carried out in peri-urban landscape and, consequently, contribute to better future planning and management of this space. Accordingly, the selected methods needed to involve both people and place.

The meaning of the term *pattern* which, in fact, indicates a regular and intelligible way that something is done (Online Oxford Dictionaries, 2013) almost naturally suggested a mix of methods as the most appropriate approach to address this research phenomena. One way to identify the patterns may be by constant repetition of one method, but the diverse nature of peri-urban areas was the main reason for taking an alternative approach to gathering information on the peri-urban patterns. A range of methods, which could view the research phenomena from different angles and from different perspectives, and which could view it in an objective as well as subjective way, was necessary to get a wider perspective of the research issues and to address them profoundly. As a basis for the implementation of the selected methods, two case study cities, Ljubljana and Edinburgh, were chosen, to allow the comparison of research findings.

The information gathered was analysed by techniques specific to each method of data collection used, although the analysis was predominately undertaken in an interpretative way. Grounded theory conceptually underlay the data analysis. Concepts, which represented the newly generated knowledge, were grouped into three main research interests: the character of peri-urban area, the use of, and the accessibility to, peri-urban green space.

The findings of all the methods have proved their reliability when they were triangulated with each other. Comparing and contrasting were the operations underlying the triangulation of findings and interpreting the results. For example, on the topic of accessibility of peri-urban open spaces, the concepts, generated from the focus groups discussions (i.e. the primary data collection), strengthened its validity when compared with the Spatial Accessibility Layer (i.e. secondary mapped data).

On the basis of the critical comparison of different methods, the relevant information was extracted and the patterns were elucidated. Then, the empirical knowledge was recognised as firm enough to be critically compared with the previous research, in order to gain its theoretical validity.

The implementation of all the methods and their analysis, on the operational level, is described in the next four chapters (Chapters Five to Eight).

Chapter 5: Data collection

In Chapter Four, the theoretical considerations and background reasons for the research methodology have been discussed. This chapter discusses the primary and secondary data collection for both case study cities: Ljubljana and Edinburgh.

The chapter starts with the procedure of primary data collection, which encompasses a questionnaire, focus groups, interviews, and a spatial pattern analysis. The procedure was conditioned and guided by the pilot study conducted in Ljubljana prior to the main data collection. This study clarified the general and case-specific issues that needed to be tackled and it helped to inform the research questions which then shaped the framework for the final questionnaire, focus group and interview questions.

The initial aim of this research was to conduct the same methods with approximately the same sample size in both case studies, in order to make comparisons highly accurate. However, the unpredictability of the case study method, as outlined by Yin (2009), occurred here and an adjustment to the focus groups' size and number had to be made. Yin (2009, p.71) stressed the "need to balance adaptiveness with *rigor* – but not rigidity" in the case study method, so, accordingly, a slight variation in the focus groups' structure and number had to be made in this research since the whole data collection was led by the same research questions posited for both cities.

In addition, due to the real-life exploration,[42] a certain proportion of case-specific questions could not be avoided. Moreover, these kinds of questions have been viewed as being useful in order to elucidate the differences and similarities between the two cases.

[42] Specifically, this refers to the differences in each city's current organisation, historic planning regulations, etc.

5.1 Application of the methods

5.1.1 Peri-urban land use components

For the purpose of both primary as well as secondary data collection, the green space typology had to be determined. The typology of open spaces in this research is based on Planning Policy Guidance 17 (PPG17), (2002) typology of open spaces; and is elaborated according to the Urban Green Spaces Taskforce (2002), open space sub-types. PPG17 splits 'open space' into two main sub-sets: green space, which is normally vegetated; and civic space, which is predominantly hard-surfaced and is not in the focus of this thesis.

Primary typology level	Secondary typology level
Public parks and gardens	Urban parks and gardens Officially protected parks, according to the national legislation: – Country Parks; – Regional parks; – Local parks; – Nature parks; – National parks and other wilderness environment
Provision for children and young people	Play Areas Facilities for young people Facilities for special activities (e.g. skateboard parks, outdoor basketball goals) 'Hanging out' areas (including teenage shelters)
Amenity green spaces	Informal recreation areas Housing green spaces Other amenity green space
Allotments, community gardens and urban farms	Allotments Community gardens City (urban) farms
Outdoor sports facilities	School playing fields Other playing fields and pitches Other outdoor sport areas
Natural/semi natural greenspaces	Woodland (coniferous, deciduous, mixed) and hedgerows Remnant, vacant land and green belts and wedges: –Grassland (downland, meadow); –Moor Lakes and wetlands (e.g. marsh, fen) Stream corridors Wastelands (including disturbed ground) and brownfield sites
Green Corridors	Linear green spaces Tree belts and woodland River and canal banks Road and rail corridors

	Cycling routes within towns and cities Pedestrian paths within towns and cities
Cemeteries and churchyards	Churchyards Cemeteries
Civic spaces	Sea fronts (including promenade) Civic squares (including plazas) Residential roads Market places Streets Setting for public and heritage buildings Other hard surfaced areas
Accessible countryside in urban fringe areas	

Table 5.1: The typology of public green space is adopted from PPG17 (DCLG, 2002), Urban Green Spaces Taskforce (DTLR, 2002) and Green and Public Space Research (Bell et al., 2006).

The focus of this thesis pertains only to the green spaces in the frame of peri-urban areas. The definition of peri-urban green space is based on Schipperijn's (2010, p.25) definition of urban green spaces: "publicly owned and publicly accessible open space with a high degree of cover by vegetation, e.g. parks, woodlands, nature areas and other green space. It can have a designed or planned character as well as a more natural character." According to Schipperijn et al. (2010, p.25), the use of (peri)[43]-urban green refers to "any sort of visit to an urban green space, without looking at the duration of the stay, the reason for visiting or the activity done while visiting; e.g. passing through on the way to a destination is also counted as use."

In the frame of this definition, a further focus of the data analysis lies within an interest in the following green open spaces:

- Public parks and gardens (→ Country parks; → Nature parks);
- Natural/semi-natural green spaces (→ Remnant, vacant land and green belts and wedges);
- Accessible countryside in urban fringe areas.

[43] Author's addition.

5.1.2 Questionnaire application

5.1.2.1 Questionnaire design

In relation to the primary data collection, the questionnaire was the first method that was used in both case studies. As mentioned in Section 4.3.1.1, it was used in order to investigate three main topics: use of, preferences for, and accessibility of the peri-urban landscape. The full questionnaire can be found in Appendix C.

On the basis of these topics, the questionnaire was divided into four parts comprising questions about:

(1) General use of, and access to, green space types in and around the city.

The information sought was related to finding out the types of green spaces that people most often go to and how much time they would be prepared to take to travel to get there. The list included urban, rural and peri-urban green spaces: eleven green space types in Ljubljana, and ten in Edinburgh.[44] Additionally, the respondents were asked about their mode of transport in getting there (e.g. whether they owned a car, would they ride a bicycle, etc.) The questions encompassed single- and multiple-choice answers, and matrix questions, which are a 2-dimensional version of multiple-choice question type.

(2) The leisure and recreational behaviours of respondents, and their access to specific peri-urban green spaces.

This part of the questionnaire asked about the frequency of visiting the listed, named, peri-urban green spaces, selected for each case-study city specifically and according to their type, quality, size, distance to the urban setting, and their accessibility. The respondents' choice of (peri-urban) green space that they visited most often was followed by several questions related to it, such as: with whom they go there, where they travel from, when they go to visit, how satisfied are they with the management of this place, etc. The types of questions in this part ranged from single- and multiple-choice answers to matrix and open answer types of questions. Furthermore,

[44] Green space type 'marshland' was not included in Edinburgh case since there is no marshland in vicinity of the city.

the five-point Likert scale[45] was used for the statements about the deciding factors for the choice of transport, satisfaction with the current management of their selected peri-urban open space, and the future management of that area. The variety of question types aimed to capture the most comprehensive answers on the use of selected peri-urban green space as possible.

(3) The perceptions of, and attitudes to, most often visited green, open peri-urban space.

This part aimed to understand the linkages between a sense of place and landscape characteristics. The respondents were asked to answer several questions in order to get information on how their attitudes and preferences towards the physical, cultural and social attributes of their most visited peri-urban green space (as selected in the previous part) and how the "sense of place" is encountered in the human-environment relationship.

Altogether, 19 statements, of a five-point Likert scale type, were formulated for this section of the questionnaire, ranging from 'Not at all' (1) to 'Completely' (5), and a 'Don't know' option[46] in addition. The foundation for the formulation of these questions was based on research previously carried out by Jorgensen and Stedman (2001), Deutsch et al. (2011), Soini et al. (2012), and Semken et al. (2009). In accordance with these authors' research, the statements posited in the questionnaire aimed to measure the following sense of place components:

Place identity:

I feel relaxed when I am there.

I feel happiest when I am there.

This place is my favourite place to be.

This place makes me feel as if I can be myself.

[45] Likert scale: "A widely used format developed by Rensis Likert for asking attitude questions. Respondents are typically asked their degree of agreement with a series of statements that together form a multiple-indicator or -item measure. The scale is deemed then to measure the intensity with which respondents feel about an issue." (Bryman, 2008, p.695)

[46] All of the 'Likert scale' types of questions in this questionnaire offered a 'don't know' option, in order not to force people to express views that they do not really hold (Bryman, 2008). However, by including this option, I was aware that this option allows respondents a possibility to select it when they cannot be bothered to think about the issue (Bryman, 2008).

Place dependence:

I really miss this place when I am away.

This place is the best place for doing the things that I enjoy the most.

As far as I am concerned, there are better places to be than at this place.

Rootedness:

I know this place inside out.

My roots are here.

I have spent the majority of my childhood here.

In addition to these three aspects contributing to a sense of place, the physical, cultural and social aspects of their most visited peri-urban green space were included also in the exploration:

Social environment:

I like this place because there are friendly people around.

I care about the future of this place.

I'm not moving away from this part of Ljubljana/Edinburgh in the near future.

Physical surroundings:

This place and its surroundings have many local history and cultural features.

This place and its surroundings are good just the way they are.

This place and its surroundings are important most of all for their forests and water features.

This place and its surroundings are important most of all for their open fields.

There aren't any features of this place that annoy me.

I feel as if I'm able to move freely in this place.

(4) Socio-demographic information relevant to the respondents.

This part of the questionnaire included questions about: gender, age, education, current occupation, children, respondents' residential area, type of housing, length of living there, and ownership of a second house.

The initial aim was to design a user-friendly layout for the questionnaire. Accordingly, the cover page explaining the research was in colour, the font and size was Calibri 11; each part was started on a new page and briefly explained. Also, the aim was to design a short questionnaire. On the other hand, detailed data on the most used peri-urban space had to be collected since this was the main method which involved the views and opinions of a large sample size. Hence, overriding the desire to limit the length of the questionnaire (the final questionnaire had 10 pages in total, and the last sheet was left blank), the goal was not to exceed the maximum time of 15 minutes to answer the questions.

In order to get an insight into the average answering time and to resolve possible ambiguities in regards to the content and design, the questionnaire was piloted, in both cases, among random city dwellers (not necessarily from the city-centre area). On the basis of their feedback, some of the questions were deleted, shortened, and corrected.

5.1.2.2 Questionnaire administration

The questionnaire was administered in both cities among the dwellers from the centre of the city. The definition pertaining to inner-city dwellers has been made separately for each case study and has been based upon the delineation of the inner-city area as described in city planning documents. The survey has aimed to involve a range of people, different in their occupation, age and gender, etc.

This area was chosen in accordance with the primary aim of this research study, which was to focus on the city dwellers that lived in the central areas of the city since they do not have extensive peri-urban areas on their doorstep. The area of distribution was chosen on the basis of the administrative borders. In Ljubljana, this

was a central district community[47] centre which holds 9% of the population of the whole municipality.

The initial aim was to collect a representative sample of the entire adult population in the administrative unit chosen: a balanced proportion between the three target age groups: 18-29 years old,[48] 30-59 years old, and 60+ years old. The census data of the city and the area of questionnaire distribution were checked beforehand, in order to collect a sample, which would be proportionate with the census data. The results (comparison of the questionnaire sample and census data) are reported further in this thesis, in Chapter Six (Section 6.1.1).

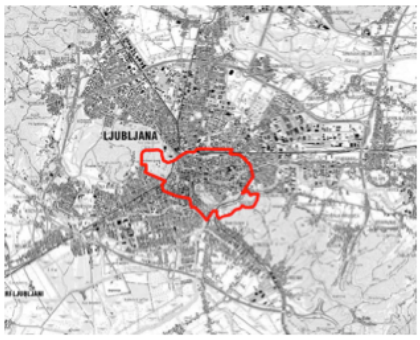
	Ljubljana	**Edinburgh**
Area	Administrative unit: District community centre 	Postcodes: EH1 1; EH1 2; EH1 3; EH2 1; EH 2 2; EH 2 3; EH2 4; EH3 6; EH3 7; EH3 8; EH3 9; EH7 5; Eh 8 8; EH8 9; EH 9 1 
Size	5 km^2	9 km^2 *
Population	25.053 (approx. 9% of the city population; 3.179 < 18 years old; 4.825 > 65 years old)	Approx. 70.200 (approx. 14% of the city population; approx. 12.000 > 65 and < 18 years old)
* Of this, almost one quarter of the area (i.e. the area of Arthur's Seat and Holyrood Park) is not populated.		

Table 5.2: The questionnaire distribution area in both cities.

Data collection took place in April 2012 in Ljubljana, and in November 2012 in Edinburgh. The study data were collected differently in Ljubljana and Edinburgh.

[47] Prior to the establishment of the Municipality of Ljubljana, district communities were independent municipalities, encompassing local communities. There are 17 district communities in the current organisation of the municipality.

[48] In Ljubljana only, there were six respondents aged below 18; two of them were 16, one 13 and three 15 years old. The questionnaire samples, filled in by these respondents were included in the analysis; however, the target age group was kept at the range 18-29 years old respondents.

From the outset, the intention was to administer a paper-based questionnaire in both cases; however, due to the financial limitations of this research for collection by post, I needed to find different ways to collect the questionnaire forms. Finally, in Ljubljana, all distributed questionnaires were paper-based: 900 samples were administered to the randomly chosen household post boxes in the study area, ensuring that the samples were distributed evenly in the whole assigned distribution area. The respondents were asked to return the completed samples within 14 days from their distribution in the collection boxes, which I provided in the foyer area of each building. The returned samples were checked to ascertain whether the respondents' age corresponded to the distribution area census data. The missing percent (which concerned the age group of 60+ years old) was additionally collected via snowball effect. In total, 163 (an 18% response rate) of valid questionnaires were collected.

In Edinburgh, the same way of collecting completed questionnaires was not feasible because post boxes in most apartment buildings are common for all residents of a building. Therefore, I collected the questionnaires in two ways: via an online survey and via paper-based questionnaires.[49] The online version was identical to the paper-based and it was sent to all Edinburgh College of Art students' e-mail accounts, to community centres, various leisure and recreational organisations, etc.[50] The total number of valid questionnaires collected was 77. However, the respondents' age primarily fit the age group of 18-29 years old. Therefore, the paper-based questionnaires were distributed to achieve the balance of ages.

The paper-based questionnaires were collected using convenience sampling. In order to get as comprehensive a sample structure as possible, I aimed to approach people of both genders and different social status. I approached possible respondents in various environments around the city centre, which I assumed were popular with the

[49] The aim was to collect at least half of the samples via paper-based questionnaire in order not to exclude the respondents who might have had low or no access to new technologies. This was achieved, however, the final count of the older respondents, who were most targeted group in the paper-based questionnaire administration, was still lower in comparison with the proportions of age groups in Ljubljana.
[50] In this case, the questionnaires were collected via snowball effect technique.

age groups 30-59 and 60+ years old people. These environments included public parks, children's playgrounds, community centre interest groups, voluntary organisations, etc. A particular emphasis was in going to community centres which offered the activities for people aged 50+, since a mid-check of collected samples during the data collection period showed that the proportion of the older age group participants was relatively small. However, in general, the only condition for the respondents' eligibility to fill in the questionnaire, was their residency: before starting to fill in the questionnaire, the participants had to tick their postcode from the list provided to make sure that they resided in the study area (as illustrated in Table 5.2). The number of questionnaires, collected in this way, was 88.

5.1.2.3 Questionnaire analysis

In the questionnaire analysis, I was seeking both objective data (such as the socio-demographic characteristics of the respondents) and subjective data (for example, respondents' thoughts and opinions on peri-urban green space management). The questions asked to elicit the subjective data, especially the open-ended ones, were then subject to interpretative analysis which searched for common concepts using a grounded approach. However, in order to obtain a general overview of the data collected, descriptive statistical analysis was carried out as well as more detailed statistical analysis of significant findings. Detailed analysis of questionnaire results is described in Chapter Six.

5.1.3 The focus groups' implementation

5.1.3.1 The design of the focus groups

The main intention of this method was to explore the views of two age groups relative to the open spaces that they use, and the physical and perceptual barriers for not using other spaces. Specifically, the following objectives of the focus groups were:

- to gain information on what types of peri-urban landscapes are appealing to inner-city inhabitants and their leisure activities, and why;

- to learn about their daily/weekly/seasonal patterns of use;
- to find out what are their preferences and opinions regarding the peri-urban areas;
- to find out what landscape features they like or dislike;
- to find out the distance they will travel and how they travel to the place (which means of transportation did they use); the reasons for their choice; and their opinion on the nature of routes to and from spaces, in order to gain an understanding of the current condition and possibilities for better sustainable accessibility to peri-urban areas.

Because of these rather firmly set objectives, I decided to have a more structured approach in the conduct of the focus groups, which involved a standardised interview guide and a considerably high level of moderator involvement. Namely, the focus group method in this research was used to get additional information to that from the questionnaire, and not to explore initial research issues (Morgan, 1997). In accordance with the sequence of the posed objectives, the standardised interview guide for the focus groups was compiled. The guide enabled me to frame topics, probe responses and keep participants on track. It consisted of eight parts (see Appendix D.5 for details):

(1) Welcome and presentation;
(2) Introduction;
(3) The leisure and recreational activities of urban residents;
(4) The use of, and attitude to, the landscape on the boundary of the city;
(5) The landscape and environmental characteristics of these areas;
(6) Accessibility of the peri-urban landscape;
(7)* Barriers to greater use of peri-urban areas;
(8) Conclusion.
*The questions in this part were only asked if the participants did not go to peri-urban green spaces for their leisure and recreational activities, as asked in part (3).

The interview guide was identical for both case studies, however, the discussions themselves were semi-structured: although I tried to follow the interview guide, I left the participants to talk freely, and sometimes diverge from the topic into, for example, complaints about the city traffic regime or personal stories of their homestead garden. Moreover, at the beginning of the session, I encouraged them to slightly diverge into their preferred topic, in order to make them feel at ease and that they did not just have to answer my questions. The more free way of talking did, in turn, sometimes lead to the issues that were interesting for this research and I tried to tease them out more by posing sub-questions, not planned in the interview guide.

I aimed to conduct two to three focus groups from each age group for each case study, or until the theoretical saturation was reached.[51] Furthermore, my goal was to recruit six to eight participants (there were more people invited to overcome the potential dropout), balanced between male and female. Time-wise, each session was planned to last one, to one and a half hours.

5.1.3.2 Conducting the focus groups

In Ljubljana, focus groups were conducted in May and June 2012 and in Edinburgh in November 2012. I tried to recruit possible participants via various organisations (voluntary organisations, community centres, local recreational groups), acquaintances, e-mail invitations, in schools, universities, student organisations, daily centres for older people, etc. To raise the general interest, refreshments and promotional gifts were offered to participants, however, the low interest in participation remained. I had to lower the criteria and search for participants that resided in other parts of the city, not just the city-centre area (this was the case in both younger people focus groups in Ljubljana and both older people groups in Edinburgh). Also, the gender balance was compromised: with one exception, in all cases, female participants were in the majority.

[51] "Calder (1977) proposes that, when the moderator reaches the point that he or she is able to anticipate fairly accurately what the next group is going to say, then there are probably enough groups already. This notion is very similar to the theoretical saturation criterion" (Bryman, 2008, p.477).

In total, three focus groups with older people and two with younger people were conducted in Ljubljana. In Edinburgh, two sessions with each age group were carried out. The details are listed in Table 5.3, below.

		Ljubljana		Edinburgh	
Demographic data of participants		Older group	Younger group	Older group	Younger group
Gender:	Male	3	6	4	3
	Female	17	6	16	9
Average age		70.55	27.75	69.3*	23
Area of residence		7 participants from outside the city-centre area	4 participants from outside the city-centre area	16 participants from outside the city-centre area	1 participant from outside the city-centre area
*Two of participants refused to tell their age and are therefore not included in the calculation.					

Table 5.3: Demographic profile of focus group participants.

5.1.3.3 Analysing the focus groups

All focus group sessions were recorded and then transcribed, with not only participants' words noted, but also their laughter, any criticism in their voices, etc. The transcriptions were coded using the grounded approach (see Section 4.4.1 for details).

5.1.4 Interviews with authorities and planners

5.1.4.1 Preparation for the interviews

The interviews were undertaken after the questionnaire had been administered and the focus groups had been conducted. Therefore, it was carried out with some findings from both previous methods in mind. As explained in Section 4.3.1.3, I aimed to obtain the views on the research topic from 'the other side'. Accordingly, the target profiles of interviewees were: regional and municipal authorities/officials dealing with land use, urbanisation, and regional planning; independent researchers; urban, transport, and regional planners; landscape architects; architects; policy makers, and academics in relevant disciplines.

An interview guide consisting of open-ended questions was composed and used to direct conversation on three topics: first, the notion of a peri-urban area; second, the knowledge of the level of use and understanding of possible problems with use/no use of peri-urban open spaces; and third, the matter of accessibility to these spaces (see Appendix E.3 for details on the interview guide). Not all of the interviewees were asked the same questions, but the questions were selected according to the professional background of the interviewee. However, the interview guide was, in general, the same for both case studies and I asked interviewees with the same background the same questions, in both cases. Only the questions related to the regional or local planning policies were, of course, adjusted to the specific case.

Typologically, the questions consisted of verbal questions and drawing-based questions. The latter required the interviewee to indicate on the map the peri-urban area, urban fringe, and green space in and around the city that they considered as the most used by city dwellers. For this task, maps of the city and its surroundings were provided and the interviewees were drawing on tracing paper, placed on the top of a map.

5.1.4.2 Conducting the interviews

Interviewing took place in June and July 2012 in Ljubljana and in December 2012 and January 2013 in Edinburgh. There were eight experts in Ljubljana and seven experts in Edinburgh interviewed from the local authority, practical and academic backgrounds (see Appendix E.4 for details). Each interview session lasted between half an hour and two hours. I left the interviewees to expand on their answers and share their opinions and views, which is the main reason for the variability in the interviews' duration. The additional reason for this is the number of questions asked, which varied according to the interviewees' background.

Initially, I contacted also the transport authorities. However, interviewing them was unsuccessful. In Ljubljana, the Department for Commercial Activities and Traffic of Ljubljana Municipality was contacted. After several reminders, they responded and refused to cooperate because, they said, they did not have the right expertise for the

research topic. In Edinburgh, Transport Scotland was contacted. After no response, I decided not to send any more reminders because I estimated that I had collected the information I sought in discussions with the experts from the City Council.

All of the experts that were interviewed were happy to participate and also agreed to have their sessions recorded. The maps, provided for the drawing-based tasks, turned out to be quite useful, not only for the planned tasks, but also for the discussion around other issues pertaining to city development and management. In a way, they also represented a means to 'doodle around' and thus to support any ideas or thoughts' people had by drawing.

Interviews were transcribed, coded and grouped into the main categories, in a similar way to the focus group discussions. However, due to the length of time taken, unlike the focus group discussions, the interviews were not transcribed completely, but only relevant paragraphs were transcribed.

5.1.5 Landscape characterisation of the peri-urban areas in both cities

Overlay analysis[52] was used to delineate the peri-urban areas in both case study cities. The procedure was carried out in four steps which are graphically presented in the diagram below (Figure 5.1).

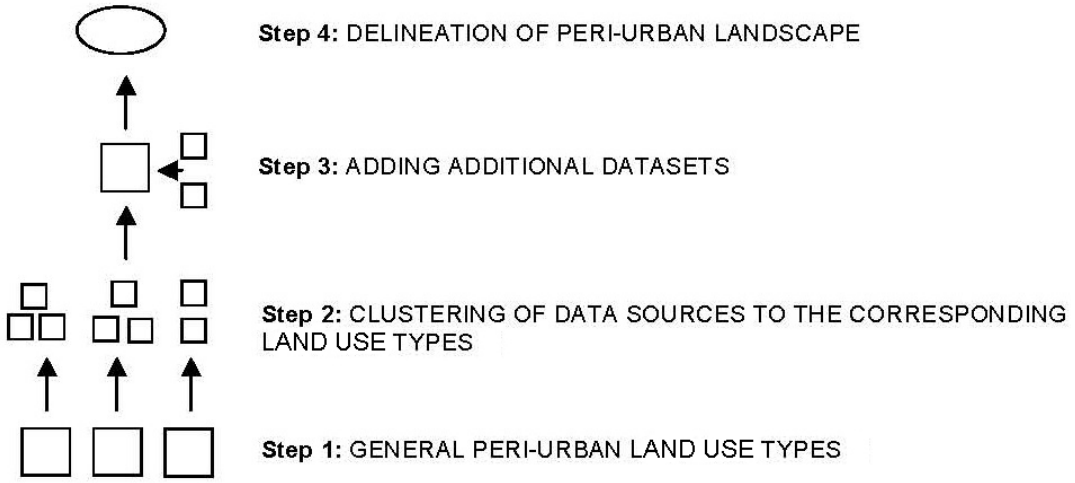


Figure 5.1: The four-step procedure for delineation of the peri-urban landscape.[53]

[52] Deming and Swaffield, (2011, p.183) defined overlay analysis as "a graphic technique for discerning and assigning the scale of values, as well as the evaluation of spatial correlation and conflict among these values." For a conceptual discussion on this method see Section 4.3.2.1.

Step 1: Identification of general peri-urban land use types

General peri-urban land use types were defined on the basis of the literature review (see Section 3.1.3 for details):

- Areas of residential-scale agriculture;
- Areas of intensive, industrial-scale agriculture;
- Wastelands and brownfield sites;
- Areas of cultural landscapes, conserved as historical parks;
- Protected natural areas for active and solitary recreation.

Step 2: Selection of data sources, assigning them to the corresponding land use types, identified in Step 1

Once the general peri-urban land use types were identified (as explained above in Step 1), the data sources, gained from city council and other governmental offices, was selected and assigned to the corresponding land use types. The data sources included the information on regional parks, protected areas such as Natura 2000, ecologically important areas, etc. The relevant data sources were transformed to datasets to be used in a GIS environment. There they were overlaid and merged into clusters, which were correspondent to the general land use types (as defined in Step 1). The outcome of the second step was a graphical representation of general land use types.

	LJUBLJANA	EDINBURGH
General peri-urban land use types	Datasets	Datasets
Areas of residential-scale agriculture (ARSA)	- Private gardens	- Private gardens, residential amenity green space, churchyards, cemeteries, allotments and community gardens;

[53] The procedure of peri-urban areas delineation is similar to the Antrop and Van Eetvelde's (2009) proposal for the typology and characterisation of the contemporary landscapes of Belgium. However, in terms of methodology, I followed the work of Swanwick (2002) and Marušič (1998). The Antrop and Van Eetvelde's method was discovered only after the delineation in this research was done and only their semantics was adopted.

Areas of intensive, industrial-scale agriculture (AIA)	- Primary agricultural land, secondary agricultural land; - Vineyards, orchard plantations, forest tree nurseries, fields and gardens	- Golf course areas;[54] - Agricultural crop land; - Semi-natural wetland
Wastelands and brownfield sites (WBS)	- Afforestation areas, land with negligible or no vegetation cover; - Area of land use – protected areas conflicts: - Degraded landscapes; - Degraded urban areas; - Areas of environmental infrastructure; - Landfill sites, abandoned gravel pits, quarries and sand pits; - Industrial sites; - Scattered development; - Infertile land;	- Dams, boatyards, drains, weirs, docks, lock-gates, ditches; - Housing proposals; - Minerals sites; - Undeveloped land; - Urban area types; - No use, dump and low density areas
Areas of cultural landscapes, conserved as historical parks (HP)	- Areas for tourism and sports parks; - Sport and recreational areas and green spaces; -Forest with a special purpose, forest reserve, forest buffer; - Nature protection areas, ecologically important areas, Natura 2000 protected areas. - Temporary grasslands, grassland and pastures, marshy grassland, trees and shrubs, forest, marsh - Historical parks and squares; - Designated green areas.	- Canals, streams, rivers; - Surface water; - Foreshore; - Green access routes, public parks and gardens, school grounds, tennis courts, bowling greens, playing fields, open semi-natural green space, transport amenity green spaces, green space for other sports; - Parks; - Grasslands; - Gardens and designed landscapes; - Forests; - Scheduled monuments; - Conservation areas; - Country parks; - cSLA (Special Landscape Area); - Local nature conservation site; - SINCs (Sites of Importance for Nature Conservation)
Protected natural areas for active and solitary recreation (PA)	/	/

Table 5.4: Data sets used in the overlaying process.

Step 3: Adding further information relevant to the delineation of the peri-urban landscape

The data sources of peri-urban areas, as designated in local development plans and/or other formal documents, were also overlaid with the datasets derived from the outcome of Step 2.

[54] Golf course areas are categorised under areas of intensive, industrial-scale agriculture because of their intensive care, often connected with environmental issues such as herbicide pollution, soil erosion, decline of biodiversity, etc. However, this may be a greater issue in mainland Europe than in Scotland, since in mainland Europe the seasonal climate variations are greater which demands a higher maintenance of golf courses.

Additional information/datasets	LJUBLJANA	EDINBURGH
Population density = 100-500 inh/km^2	- Pertaining to settlements in the municipality of Ljubljana and the settlements of all the neighbouring municipalities.	- Pertaining to postcode areas of the municipality and of the neighbouring municipalities.
Municipal spatial plan designation of peri-urban areas	Šentvid, Polje z Novim Poljem in Črnuče, Pržan, Kamna Gorica, Podutik, Gunclje, Stanežice, Medno, Brod, Tomačevo, Ježa in Podgorica, Vevče, Kašelj, Zalog, settlements west from the city bypass near to the Polhograjsko hribovje, Šmartno, Gameljne, Bizovik, Spodnja Hrušica, Sostro, settlements along the Ižanska road, Črna vas.	Rural West Edinburgh Local Plan
Other information	- Pilot study: areas according to the secondary data collection (spatial analyses, historical maps). - Green space areas.	- Green space areas.

Table 5.5: Additional information relevant to the delineation of peri-urban landscape.

Step 4: Delineation of the peri-urban landscape

The overlaid data sets have shaped specific spatial patterns. On the basis of their spatial representation, the peri-urban area was manually delineated. Since the peri-urban area in this thesis is defined as the compound of the urban fringe and urban periphery (see Section 3.1.1), both components were delineated separately, where possible.

All mapping was carried out in a GIS[55] supported environment. It was achieved with a combination of two computer software programs: the data in vector format was prepared, adjusted and cleaned up in Arcview GIS 9.2 and then imported into Proval, where it was rasterised and its cartographic representation finalised.

5.1.6 Structural Accessibility Layer

Since "words are good at describing qualities, but they are less good at describing quantity" as Deming and Swaffield (2011, p.70), put it, a Structural Accessibility Layer (SAL)[56] (Silva, 2008) was applied to quantitatively measure and graphically

[55] Haines-Young et al. (2004, p.4), defined GIS as: "any computer-based system for the input, storage, analysis and display of spatial information."
[56] For the theoretical overview, see Section 4.3.2.2.

represent the accessibility levels of peri-urban green spaces. Operationally, it was programmed in ArcView GIS 9.2 using a Network Analyst Layer extension. SAL has determined the accessibility of green spaces, based on the frequency of use and the variety of green space types.

In the practical application of SAL, several choices needed to be defined for each case, specifically (Figure 5.2).

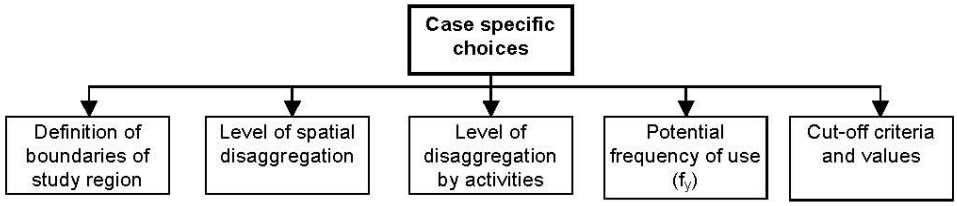


Figure 5.2: Case-specific choices for the accessibility measure (Silva, 2008, p.80, illus., Figure 4.5).

I. Definition of the boundaries of the study region:

In both cases, the main interest was the degrees of accessibility of peri-urban green spaces from the city-centre area. However, to get a wider perspective and the chance to compare access of people from different parts of the city, the green space accessibility of the populated area in the whole municipality area was assessed in both cases. Because, potentially, mobility may extend beyond municipal borders (which is easily feasible given individuals' personal means of transport) and thus people have access to a greater number of the activities under consideration (i.e. green space types), in both cases, the assessed area was larger, to include also the neighbouring municipalities. Hence, in Ljubljana's case, the activities within Ljubljana's urban region[57] were examined. For Edinburgh, the area of the City of Edinburgh was analysed, and the activities in East Lothian, Midlothian, and West Lothian were included as well.

[57] Ljubljana urban region is the Central Slovenian Statistical Region, which encompasses 26 municipalities of the region.

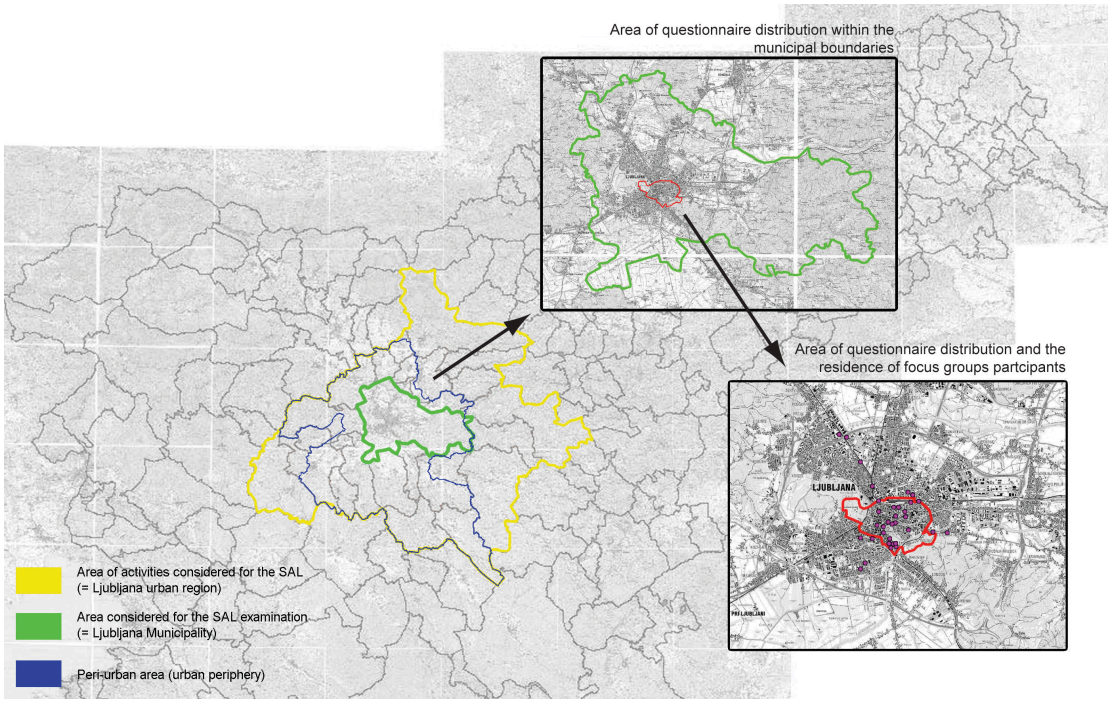


Figure 5.3: Area boundaries for SAL examination, questionnaire distribution and the residence of focus group participants, for Ljubljana.

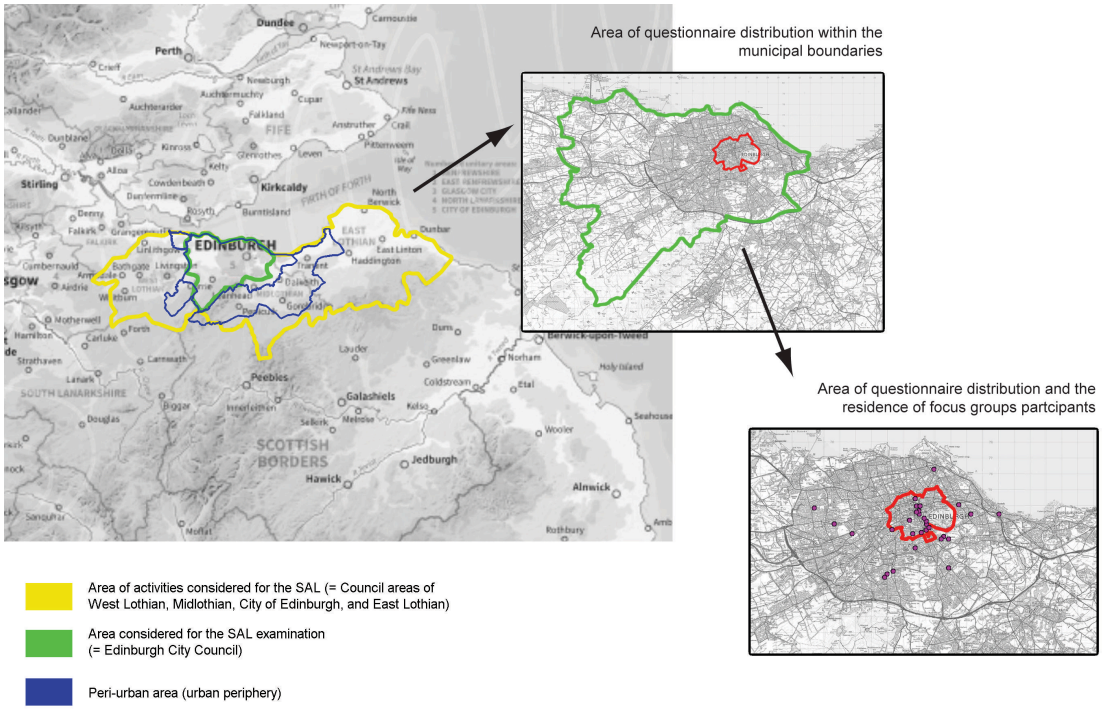


Figure 5.4: Area boundaries for SAL examination, questionnaire distribution and the residence of focus group participants, for Edinburgh.

II. The level of spatial disaggregation:

Silva (2008) suggests spatial disaggregation should be at least at census track level or grid based, with cells not exceeding 1 km^2. However, in practice, this depends on the statistical data available in each case.

In the case of Ljubljana, spatial disaggregation was taken at census track level, with sub-areas based on a 100x100 m grid.[58] The statistical data of sub-areas available for the Edinburgh case, however, was based on the division of the study area into areas with similar ranges of population.

Although this study aimed to implement an identical procedure in both cases, this was not possible due to the format in which the statistical data was available. The format of data was different in Ljubljana and Edinburgh. Accordingly, Ljubljana was measured by giving consideration to the area and Edinburgh was measured by considering the population. This difference was born in mind when reporting the results of the analysis.

III. The level of disaggregation by activities:

In this research, considered activities pertain to the green space types (see Section 5.1.1), which were eleven in Ljubljana and ten in Edinburgh (Table 5.6).

IV. Potential frequency of use (f_y)

Potential frequency of use measures to what extent different activities generate travel. According to previously undertaken surveys (The Scottish Government, 2013; Guzelj and Košak, 2003; Omega Consult, 2009) the considered activities generate approximately 26% of all trips in Ljubljana, and 35% in Edinburgh.[59]

[58] The total grid encompassed 27.560 sub-areas, of which only 5.999 were calculated (59,99 km^2 = 21,77%), and the remaining 21.586 (215,62 km^2 = 78,23%) were considered as non-urban areas (NU), based on the following criteria: no population and no access to road infrastructure (in cases when the centroid of a cell was more than 200 m away from the nearest road) (Silva, 2008). In Edinburgh, the total size of the area was 263,56 km^2, of which urbanised area was 114,0 km^2 (43,25%) and NU was 149,6 km^2 (56,75%).

[59] A detailed disaggregation of activities and potential frequencies can be found in Appendix F, Table F.1.

Further frequency of use analysis – pertaining to eleven types of green spaces – was made on the basis of the questionnaire findings.[60]

Disaggregation of activities	Activity type (y)	The potential frequency of use of the activity type (f_y)	
		LJUBLJANA	EDINBURGH
Small local parks	1	22	15,7
Large urban parks	2	24	28,6
Play spaces for children and young people	3	6	10
Allotments, community gardens	4	2	1,4
Sport fields (school playing fields; other playing fields and pitches, other outdoor sport areas)	5	4	1,4
Large size open space areas on the edge of the city (fields, forest, hills, meadows)	6	15	8,6
Protected areas (regional parks, nature parks)	7	2	5,7
Wetlands/marshes	8	2	5,7
Green corridors (e.g. river banks, footpaths, cycleways)	9	13	12,9
Cemeteries and churchyards	10	6	4,3
Countryside settlements and their surroundings	11	4	5,7
TOTAL		**100**	**100**

Table 5.6: Activity types considered (Source: Author's own on the basis of questionnaire results (Question One)).

V. Cut-off criteria and values

In both cases, I considered four different modes of transport: walking and cycling for non-motorised modes (NMw and NMc), road (bus) and rail transport for public transport modes (PT) and the private car for private transport modes (CAR). Cut-off criteria were based on the questionnaire findings.[61] I have considered the total travel time for all of the modes.

[60] In one of the questions in the questionnaire I asked the respondents to select three open green space types in and around the city that they have visited the most on the past year (by visiting, I meant having gone there deliberately to enjoy the space as well as having just been crossing the green space to get to somewhere else) (see Appendix C for a questionnaire sample).

[61] In one of the questions in the questionnaire I asked the respondents how long are they willing to spend travelling to each type of open space (see Appendix C for details).

Disaggregation of activities	LJUBLJANA (min) NMw, NMc, PT, CAR	EDINBURGH (min) NMw, NMc, PT, CAR
Small local parks	7	10
Large urban parks	14	20
Play spaces for children and young people	5	9
Allotments, community gardens	15	13
Sport fields (school playing fields; other playing fields and pitches, other outdoor sport areas)	17	20
Large size open space areas on the edge of the city (fields, forest, hills, meadows)	30	30
Protected areas (regional parks, nature parks)	50	60
Wetlands/marshes	30	30*
Green corridors (e.g. river banks, footpaths, cycleways)	12	17
Cemeteries and churchyards	20	15
Countryside settlements and their surroundings	60	60
*Because this green space type was not included in the Edinburgh's questionnaire, the approximate travel time was taken after the Ljubljana questionnaire findings.		

Table 5.7: Cut-off criteria for all modes of transport for both case-study cities (Source: Author's own on the basis of questionnaire results (Question Two)).

Furthermore, some additional values were considered in the calculation of the accessibility index. They are listed in Table 5.8, below.

VALUE	LJUBLJANA	EDINBURGH
Average driving speed – CAR	26 km/h	30 km/h
Average driving speed – PT (bus)	16 km/h**	10 km/h***
Access and exit walking time (PT)*	5 min	5 min
Catchment area of PT stops	300 m	300 m
Average cycling speed	20 km/h	20 km/h
Average walking speed	5 km/h	5 km/h
Catchment area of NMc and NMw sub-areas and activities	100 m	100 m
* Source: (Curtis and Scheurer, 2010; Herbert and Thomas, 1997) ** Source: (Omega Consult, 2009) *** The average speed was calculated on the basis of Google Maps 'Get directions' tool, on the suggestion of the person who was contacted at Lothian Buses.		

Table 5.8: Values considered in the calculation of the accessibility index.

Since the questionnaire did not ask the respondents, specifically, about which travel mode they would choose to get to green space, I did an additional calculation on the

basis of cut-off values, provided by the literature review (Table 5.9). These values, too, considered the total travel time for all modes, and additional values, as listed in Table 5.9. For simplicity, the cut-off values disregarded several factors, which might be important in the real-life travel for all modes considered, such as access to and from public transport stops, time spent searching for and accessing parking spaces, underpasses and shortcuts appropriate for pedestrians, etc.

	NMw		NMc		PT		CAR	
	LJUBLJANA	EDINBURGH	LJUBLJANA	EDINBURGH	LJUBLJANA	EDINBURGH	LJUBLJANA	EDINBURGH
% of travel by transportation mode*	10	23	10	2	13	19	67	54
Total travel time cut-off value (min)	12 min	13 min	6 min	15 min	35 min	50 min	15 min	30 min
*Source for Ljubljana: (Omega Consult, 2009) Source for Edinburgh: (CEC, 2007) (% of travel); (Transport Scotland, 2013).								

Table 5.9: Cut-off values for travelling with a specific transport means, by the case study city.

In addition to travel time, different types of roads were considered for each transport mode.[62] Accordingly, highways, express roads and high traffic regional roads were excluded when calibrating the walking infrastructure network.

Cycling was considered only for the cycle routes, public rights of way for cyclists, roads with bike lanes and other types of roads where cycling was designated. Roads with no designated cycle lanes were excluded even if cycling was allowed. This was done intentionally: to prioritise the safety, connectivity and continuity of cycle lanes.

Public transport routes were based on data provided by the local bus operators: Ljubljanski Potniški Promet (LPP) in Ljubljana and Lothian Buses in Edinburgh.[63] Finally, the rail network was not included in either city because of the limitation in

[62] See Table F.2 in Appendix F for details.
[63] Whereas in Ljubljana LPP is the only bus operator, in Edinburgh there are several others, beside Lothian Buses. Unfortunately, due to data limitation, these were not included in the public network calibration.

data availability. Given that in both cities, the primary means of public transport is the buses, I have not considered the local rail network to be as relevant to the same extent as the bus network.

VI. The division of accessibility classes

Accessibility classes need to be defined in order to specify the sustainability measure (Silva, 2008). Also the range of classes, defined upon the values of diversity of activity index, is case-specific. I defined the same values for both case studies, with class A being extremely narrow:

Class A – High accessibility (0.9 – 1)
Class B – Medium accessibility (0.5 – 0.85)
Class C – Low accessibility (0 – 0.5)

Although activities 6, 7, 8, and 11 (see Table 5.7) may not be necessary to be considered accessible in terms of walking distance,[64] the questionnaire findings showed that these activities have a high potential frequency of use in sum (23% in Ljubljana, 40% in Edinburgh). Additionally, the proportion of leisure trips is high in both cities. For these reasons, class A has been limited to the threshold of 0.9.

5.2 Key conclusions

The research questions, as defined in the Chapter One, are related to three broader research topics: characterisation of peri-urban landscape, its use, and accessibility to, peri-urban green spaces. Accordingly, the selected research methods were designed to address one (or more) of these topics. For example, the questionnaire was designed in order to address the use of and, accessibility to, peri-urban green spaces, focus groups were concerned with the use of and, accessibility to, peri-urban green spaces, as well as the conception of peri-urban areas, and SAL examined the accessibility of peri-urban green spaces.

[64] Considering the potential frequency of use, these activities define 23% of activities in Ljubljana case, and 40% in Edinburgh, which results in thresholds for class A from 0.77-1 (Ljubljana) and 0,6-1 (Edinburgh).

The research methods were implemented in two case studies, but in each of them in the same time sequence and in the same structure. The implementation itself, however, was full of challenges which were specific to each individual method. The questionnaire administration resulted in a low response rate; I had difficulties to gaining interest to participate in focus group discussions, and to engage the focus group participants in conversation; to get the spatial data needed for the SAL execution and the technical procedure of the SAL, etc. In order to keep the equilibrium of research methods implementation between both case studies and not to lose the validity of comparison of both cases, I mitigated these difficulties as much as it was possible.

At the end, all of the methods implemented, worked well together especially considering the time sequence of their implementation. The previously conducted pilot study pointed to self-administered closed questionnaire carrying the potential of getting general insight into the use of and, accessibility to, peri-urban green space.

The initial analysis of the questionnaire results elucidated issues that needed further exploration. Focus groups were a method which then provided a satisfying frame to explore these issues in depth.

Questionnaires and focus groups were carried out with the current and potential users of peri-urban green spaces whereas the interviews with the authorities and planners aimed to contrast the research findings of the previous two methods.

Questionnaires, focus groups and interviews dealt with the people component in the social part of the study. The execution of SAL and peri-urban area delineation dealt with the place component in the spatial part of the study, which was carried out in parallel to the social part. The researcher kept the findings of both parts separately until they were triangulated in order not to introduce the researcher's own bias in the implementation, especially in the implementation of the qualitative methods.

Chapters Six, Seven and Eight, as follows, reveal the analysis and results of all methods separately. Interpretative analysis was used on the data relevant to the social and spatial results. The concepts pertaining to that analysis were grouped together such that they correspond to the three main research topics, namely: the character of the peri-urban area, the use of, and accessibility to, peri-urban green space. For each method, the findings for both the Ljubljana and Edinburgh case studies are presented together to allow their potential similarities and differences to be shown easily.

While no further analysis is presented in these three chapters, in Chapter Nine the findings and results of all the methods used are compared and discussed in terms of how they complement and/or contradict with each other, in order to answer the posited research questions.

Chapter 6: Analysis and results of the questionnaire

This chapter is focused on the research questions about activities that people undertake in peri-urban green spaces, what are their preferences with regard to peri-urban green spaces and the characteristics of accessibility to those spaces. With regard to these inquiries, the chapter discusses the most relevant and interesting findings from the questionnaire implemented in both case studies. The more comprehensive analysis of the data is listed in Appendix G.

First, the findings of the descriptive analysis for both case studies are presented together and relate to respondents' use of, their preference for, and accessibility to, peri-urban green spaces to enable a comparison to be made between them. In addition, for the questions for which the researcher assumed would show some significant differences, a comparative analysis of three age groups was undertaken, in order to reveal how (if at all) the respondents' age, as a demographic factor, affect different variables.[65] The main reason for analysing the questionnaire sample according to the age groups, in addition to the case studies, was the assumption (as discussed in Chapter One) that the younger and the older people might have less opportunity to visit peri-urban green spaces due to constraints of accessibility.[66] The analysis, on the basis of a comparison of age groups, is presented in boxes throughout the chapter. To uncover possible significant differences between the variables and frequencies, a Chi-square cross-tabulation, Mann-Whitney and Kruskal-Wallis tests were undertaken. The same tests were used also to uncover possible predictors of the use of and, accessibility to, peri-urban green open spaces. In addition, regression analysis was conducted to assess which variables best predicted the frequency of use of peri-urban open spaces.

Factor analysis was carried out to better understand the results of the third part of the questionnaire (respondents' perceptions of, and attitudes to, the green, open peri-

[65] The inquiries were for example: Are there any differences in activities that different age groups undertook in various types of green spaces; respondents from which age group visited the peri-urban green spaces the most and what were the underlying reasons for it; does the availability of means of transport to get to peri-urban green spaces affect the frequency of visits paid to these spaces, etc.
[66] See Section 3.2.6 for a more exhaustive discussion.

urban space visited most often) and to see how the outcomes of that analysis compare to research findings from previous research.

Finally, comment on all of the results is provided, with a particular emphasis placed on the elucidated similarities and differences arising from the two case studies and with a suggestion as to how the results contribute to general empirical knowledge, in order to address the research questions as discussed in Chapter Nine.

6.1. Descriptive data analysis

This section presents the results derived from the descriptive analysis and compares the results of the two case study cities, Ljubljana and Edinburgh. The analysis is divided into three sections: the socio-demographic characteristics of the respondents; the analysis of the respondents' use of (peri-urban) green spaces; and the analysis of the characteristics of accessibility to green space.

6.1.1 Representativeness of the sample

This section pertains to the socio-demographic characteristics of the respondents. In the questionnaire, the respondents were asked their gender, age, education, current occupation, if they have any children, their home's location, the type of housing, the length of residence there, and whether they own a second house or not.

I. Gender:

In both cases, there were more female than male respondents. However, this was not a constraint since the predominant interest of this research was to investigate any significant differences among the respondents on the basis of their age, and not their gender.

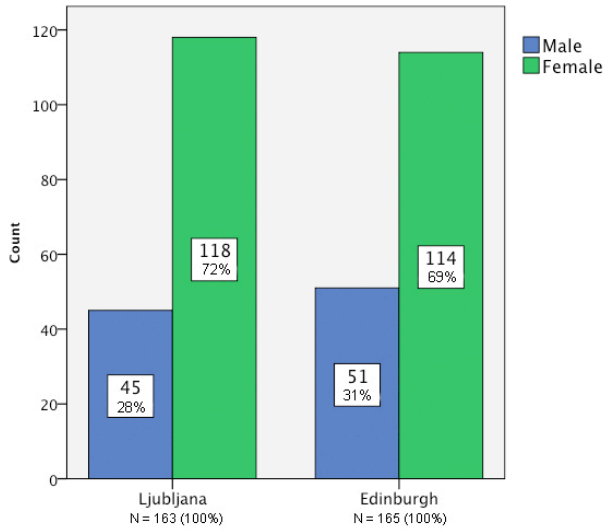


Figure 6.1: Questionnaire analysis: respondents' gender, for both case study cities.

II. Age:

In the questionnaire, respondents were asked to write down their age. For the purpose of cross-case comparison and triangulation in later analyses, I formed three age groups: 18-29 years old; 30-59 years old; and 60+ years old.

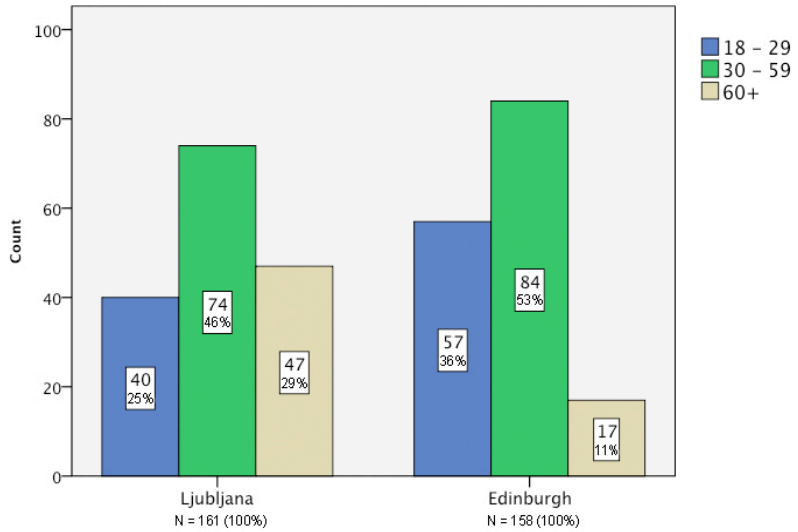


Figure 6.2: Age groups of the respondents, for both case study cities.

In both cities, the respondents between 30 and 59 years old were in the majority. The percentage of younger and older people in Ljubljana was almost the same whilst in Edinburgh the percentage of younger people was approximately three times higher than for the older group. The main reason for this difference pertains to the way in

which the questionnaire was distributed in Edinburgh, namely, the online version of it was sent to all Edinburgh College of Art students' e-mail accounts, whilst I collected the rest of the samples by approaching people in parks, squares, etc. When I approached older people on those occasions, they often rejected my request, claiming that they could not fill in the questionnaire because they had not brought their reading glasses with them. Furthermore, in 13 cases, they did not write down their age, which in the analysis of the questionnaire was marked as a missing value.[67]

The table 6.1, below, shows how the questionnaire sample in each city matched the census data of the city-centre district's boundary and the whole city area.

	LJUBLJANA			EDINBURGH		
Age group*	Ljubljana municipality	Surveyed (city centre) area**	Questionnaire results***	The City of Edinburgh*****	Surveyed (city centre) area****	Questionnaire results***
Young people	13%	22%	25%	28,9%	14%	36%
Working-age people	67%	58%	46%	56,8%	77%	53%
Older people	20%	20%	29%	14,3%	9%	11%

*This is just approximate since in each census age groups are set slightly differently.
**Age groups: 0-24; 25-64; 65+ years old. (Iskrić, 2006, p.238)
***Age groups: 18-29; 30-60; 60+ years old.
****Age groups: 0-19; 20-59; 60+ years old. (SNS, 2013)
*****Age groups: 0-24; 25-64; 65+ years old. (GROS, 2010)

Table 6.1: The age groups of respondents in relation to census statistics for both cities.

III. Education:

The proportion of respondents with a university degree was comparable in both cities (about 30% of all respondents), with the difference being that in Edinburgh, there were more respondents with a postgraduate and PhD/MPhil degree.[68] It should be stressed that the Slovenian version of the questionnaire asked for 'completed education' whereas the English version asked for 'education', and so the students

[67] The reluctance of respondents to give their age suggests that a better option would be to form the question in such a way that people could select an age range rather than precisely indicating their age. This is something the researcher will bear in mind for future research.
[68] Until recently, the Slovenian educational system was considerably different from the British one, but in order to facilitate the comparison, the responses from both samples were coded in the same way.

currently enrolled in undergraduate studies could have chosen either high school or university. However, the information on the education of respondents is not central to this thesis; this question was only asked to estimate the general income rank of the respondents.

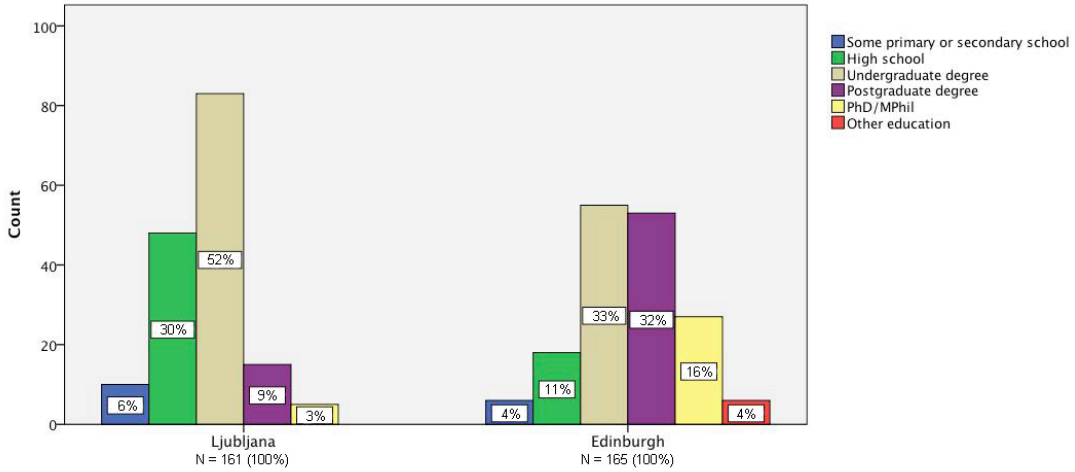


Figure 6.3: Education of respondents, for both case study cities.

IV. Current occupation:

In both cities, the majority of respondents were employed full- or part-time. The biggest difference was between respondents in full-time education and those who were retired, as can be seen from Figure 6.4. It should be noted that several respondents in Edinburgh ticked both the 'Retired' and 'Voluntary work' boxes, which indicates that although they were retired, these people maintained a considerably active life.

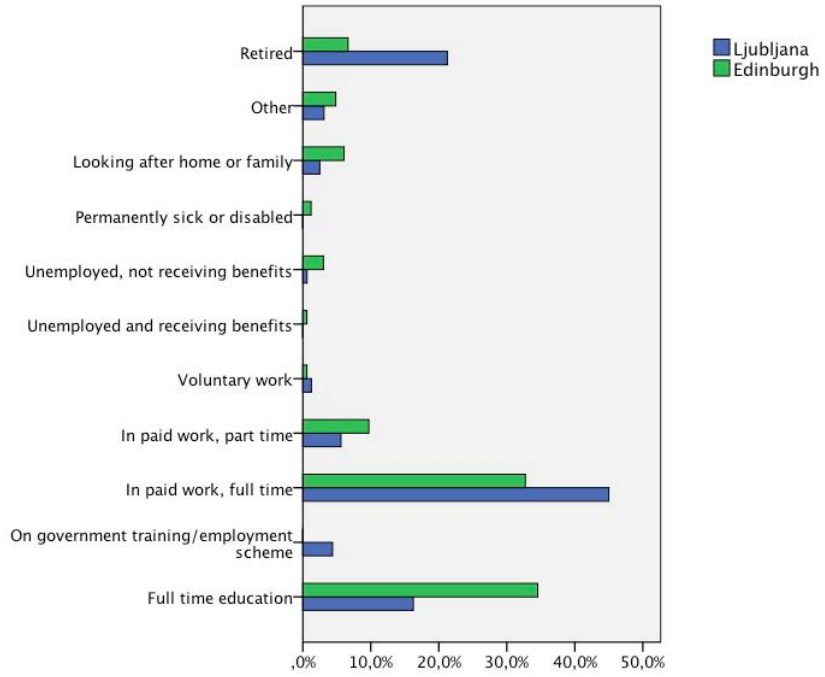


Figure 6.4: Current occupation of respondents, by the case study city.

V. Respondents' living conditions:

The questions which related to respondents' accommodation aimed to understand if there is any relation between the type of housing the respondents lived in and their visiting of (peri-urban) green spaces, and if the length of time they lived in the same place relates to the way in which they bond with that place. The questionnaires were distributed to respondents who lived in the inner areas of each case study city (Fig. 5.3 and 5.4).

In both cities, around 70% of respondents lived in an apartment, with a difference being that in Edinburgh, half of the respondents lived in an apartment that had access to a communal garden. The length of time respondents had been living in their current residence showed an interesting distribution, when analysed by the age groups.[69] In both cities, working-age people and older people tended to stay at the same place for longer (at least two years). This fact is important for the thesis topic as one of its interests is to understand how well people know their living environment and how they connect with it.

[69] See also Table G.1, Appendix G.

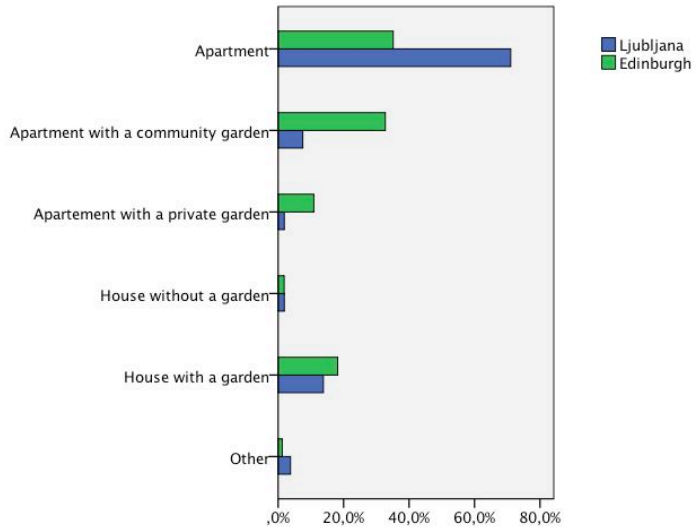


Figure 6.5: Type of housing that respondents lived in, by the case study city.

Differences according to age:

There was a significant difference between the three age groups in terms of the length of time they had lived in their current residence, in both cities (Kruskal-Wallis test: Ljubljana: χ^2 = 19,060; p-value = 0,000; Edinburgh: χ^2 = 62,326; p-value = 0,000), with the age group 60+ living significantly the longest in their current residence, in both cities.

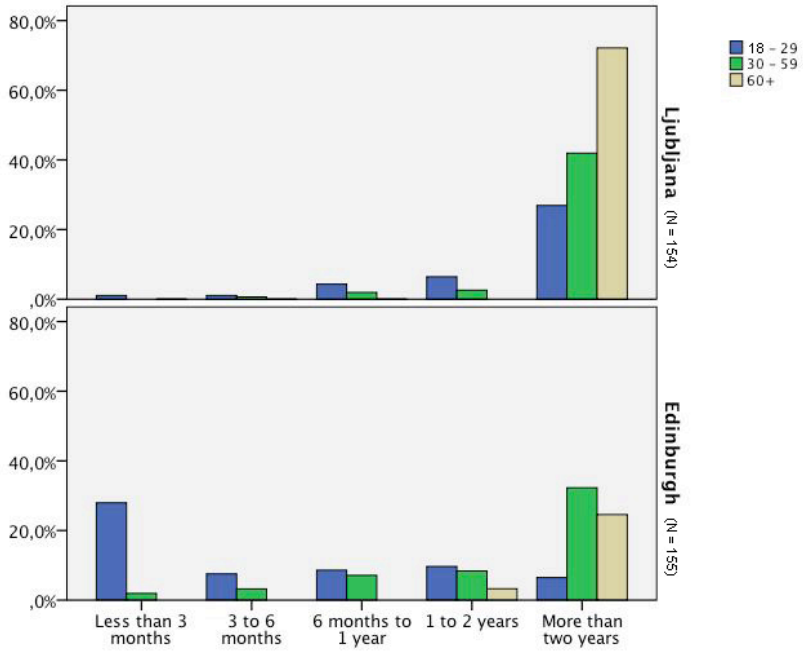


Figure 6.6: Length of time living in the current residence for the three age groups, by the case study city.

Furthermore, in Ljubljana, 45% of respondents had a second house or some kind of temporary accommodation in a rural area available to them, which they visited, on average, every fortnight. In Edinburgh, this percentage was considerably lower: only 8% of respondents had this opportunity.

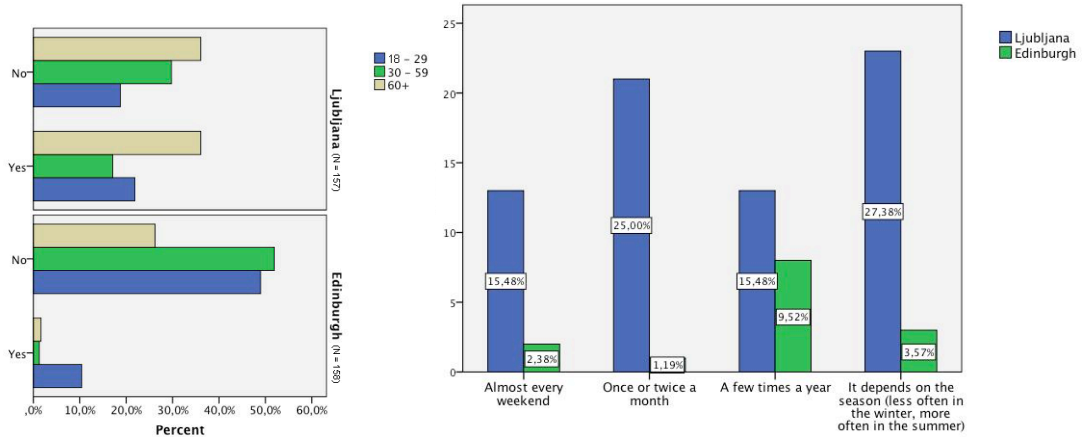


Figure 6.7: The availability of a second house/temporary accommodation in a rural area, and the frequency of second house usage (if they had one available), by the case study city.

6.1.2 The use of green spaces for leisure and recreational activities

With regard to respondents' leisure and recreational activities, the questionnaire was divided in to two parts. In the first part, my aim was to understand what kind of open spaces respondents use most frequently. In the second part, the characteristics of use that related specifically to peri-urban open spaces were explored.

I. General use of green spaces:

Figure 6.8 below illustrates the green space types upon which the respondents were asked in the questionnaire, under the corresponding three supersets of green spaces, i.e. urban, rural, and peri-urban green spaces. The focus of this thesis is peri-urban green space, which means: 'large sized, open spaces on the edge of the city (e.g. fields, forests, hills, meadows), but also refers to 'allotments, community gardens'; 'protected areas (e.g. regional parks)'; 'green corridors (e.g. river banks, footpaths, cycleways)'; 'cemeteries and churchyards'; and 'country parks, countryside

settlements and their surrounding areas', when the location of any of these spaces is on the edge of the city.[70]

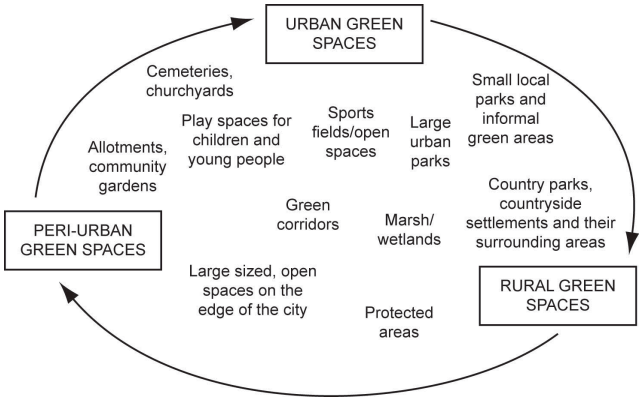


Figure 6.8: The grouping of selected green space types under urban, peri-urban and rural green spaces (Source: Author's own).

In both cities, the respondents visited large parks most frequently: 71% in Ljubljana and 85% in Edinburgh. Small parks were visited frequently also, with 66% in Ljubljana and 48% in Edinburgh. These results were as expected since the previous research proved that people on a daily basis go to visit green spaces nearby (see the discussion in Chapter Three, Section 3.2.6).

The third most visited green space, however, varied for the two cities. In Ljubljana, these were, at 42%, large sized, open spaces on the edge of the city (e.g. fields, forests, hills, meadows). This result is hugely important for this research, as these spaces are a key focus of interest for this thesis' investigation. In Edinburgh, the third most visited green spaces were green corridors, at 41%. In the same city, play spaces for children were also visited frequently, at 30%. This may be a consequence of the fact, as previously mentioned, that a reasonable number of questionnaires were collected in children's playgrounds in the city-centre area. In Ljubljana, green corridors were in fourth place, at 37%. In both cities, the spaces visited least often were allotments and sports fields.

[70] For a detailed typology of peri-urban green spaces, see Section 3.1.3.

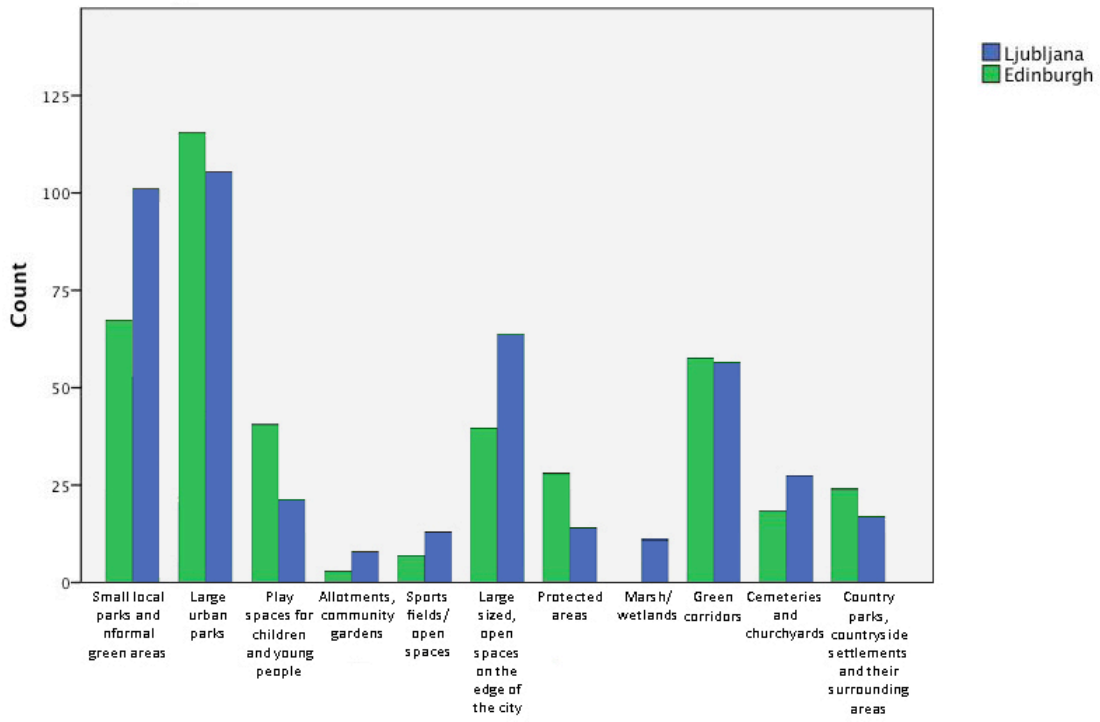


Figure 6.9: Frequency of visiting green space types, by the case study city.[71]

Differences according to age:

In Ljubljana, a significant difference was found in relation to the use of sports fields/open spaces (Chi-square test: χ^2 = 5,814; p-value = 0,055), where respondents in the age group 18-29 years old predominately visited these spaces, and in visits made to cemeteries and churchyards (Chi-square test: χ^2 = 32,500; p-value = 0,000), which the older people group visited the most. In Edinburgh, the working-age group was more likely to visit play spaces for children and young people (Chi-square test: χ^2 = 23,249; p-value = 0,000) whilst the same group was the least likely to visit large sized, open spaces on the edge of the city (χ^2 = 9,292; p-value = 0,010). These spaces were visited more frequently by young people (Chi-square test: χ^2 = 9,295; p-value = 0,01).

In summary, when comparing the cities on the basis of age groups, no pattern could be found which indicated cross-case preferences for specific types of green space.

[71] See also Tables G.2-G.4, Appendix G.

II. The use of peri-urban green spaces:

At the beginning of the part of the questionnaire which related to the peri-urban green space use, the respondents were asked if they visited green spaces on the city boundaries.[72] Only those respondents who answered 'yes' continued to fill in this part of the questionnaire.

In both cases, a significant percentage of respondents had visited green spaces on the edge of the city: 80% in Ljubljana and 78% in Edinburgh. However, respondents were not asked to provide any details of their visit, for example, where or how often they visited such spaces.

Differences according to age:

In Ljubljana and Edinburgh, working-age people tended to visit green open spaces on the city boundaries the most (Ljubljana: Chi-square test: χ^2 = 7,376; p-value = 0,025; Edinburgh: Chi-square test: χ^2 = 28,705; p-value = 0,000).

The exact details about which places, how often and by what means of transport people would go there, I asked in a matrix question where the respondents chose from a list of peri-urban places, which had been chosen for each city specifically.

Peri-urban green space sub-type	Ljubljana	Edinburgh
Green corridors	● Območje ob Savi (Tomačevo) ● Pot spominov in tovarištva	● Union Canal from the City Bypass towards Ratho ● Water of Leith from Balerno to Slateford
The beach/lake/water	● Mali Rožnik and Mostec ● Podpeško jezero	● Musselburgh (The Links, River Esk area) ● Cramond foreshore ● Portobello beach
Country parks, countryside settlements and their surrounding areas	● Janče and Orle	● Roslin Glen Country Park ● Dalkeith Country Park
Large sized, open spaces on the edge of the city	● Šmarna gora ● Rašica ● Toško Čelo	● Dalmeny and surroundings ● Little France area ● Burdiehouse

[72] The term 'peri-urban' was never used in the questionnaire because the pilot questionnaire results had shown that respondents had not understood this term. Instead, the terms 'city boundary' and 'open spaces around the city' were used. However, the questionnaire stressed that the green spaces in question were those in close proximity to the city, and not the rural ones.

	● Ljubljansko barje med Rakovo Jelšo in Tržaško cesto ● Rožnik in Šišenski hrib ● Golovec ● Krim ● Bizovik	
Protected areas	● Ljubljansko barje med Črno vasjo in Igom ● Zajčja dobrava	● Balerno/BlackHill/Glencorse/Harlow/ Flotterstone ● Bonaly/Swanston/Allermuir ● Nine Mile Burn/Monks Rigg/Braid Law
Urban green spaces	/	● Cammo Estate

Table 6.2: The categorisation of peri-urban green spaces, which were listed in the questionnaire. The green spaces may be categorised in more than one category (e.g. 'Območje ob Savi' (Sava river area) could be categorised as a green corridor or as 'The beach/lake/water') but in accordance with this thesis' topic, they were categorised on the basis of their predominant (peri-urban) character.

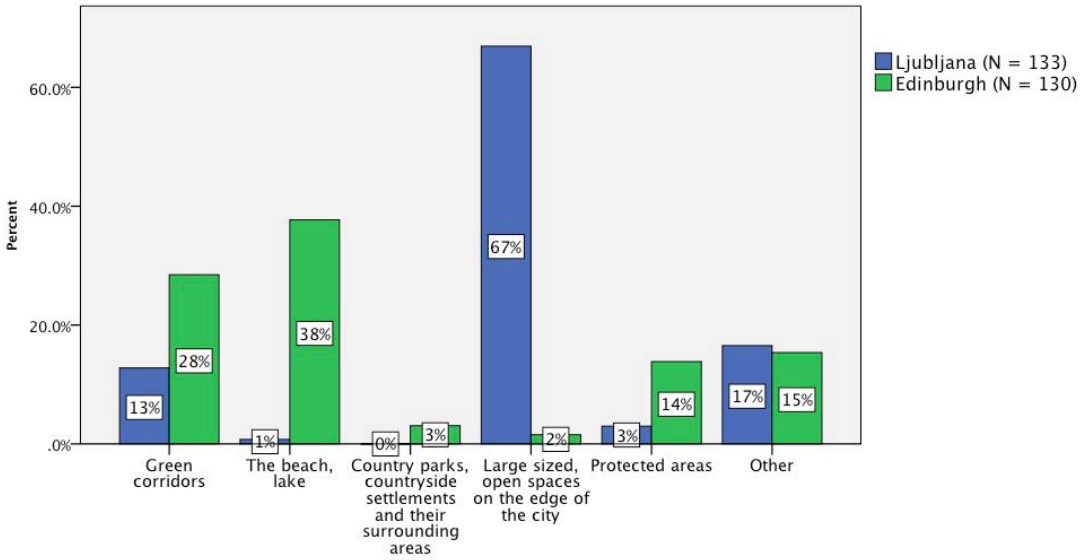


Figure 6.10: The most often visited peri-urban green space type, by the case study city.

With regard to the frequency of visits made to peri-urban green spaces, Ljubljana's respondents visited them significantly more often than the Edinburgh respondents (Mann-Whitney U Test = 10900,00; Z = (-1,957); p-value = 0,05). Figure 6.10, above, shows that the respondents from Ljubljana chose large sized, open spaces on the edge of the city as the peri-urban green open space they visited most frequently. Such spaces include hills, fields, open semi-natural areas, etc. In Edinburgh, most

respondents liked to go to the beach, followed by green corridors. The Ljubljana respondents ranked green corridors as their second choice.

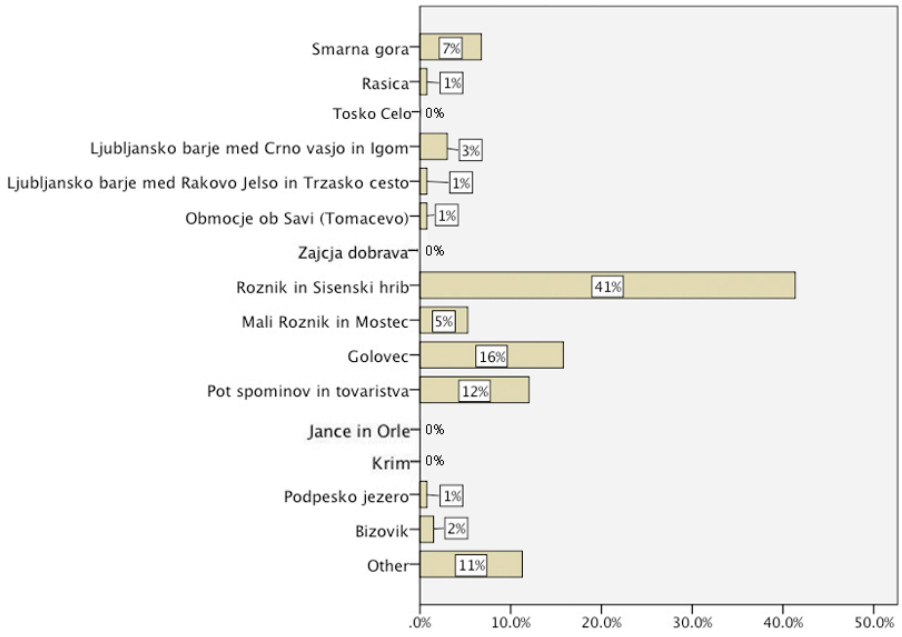


Figure 6.11: The most often visited peri-urban green spaces in Ljubljana.

Figure 6.11, above, shows the peri-urban green space areas listed in the questionnaire that was issued to participants in Ljubljana, and the number of respondents that selected one of them as the space they visited most often. It is clear that 'Rožnik in Šišenski hrib' is by far the most favoured space (54 people chose it as the peri-urban green space they visited most often).

Rožnik is a 391 m high forested hill, which is accessible by several footpaths and recreational trails from Ljubljana's Tivoli park. On the hilltop there is a church and a restaurant, which makes it an attractive destination for local walkers. Šišenski hrib hill is connected to Rožnik with several longer recreational trails, which lead on to Mostec. Table 6.3, below, shows the ranking of the reasons for which people chose 'Rožnik in Šišenski hrib'. Also, the second and third ranked green spaces ('Golovec' and 'Pot spominov in tovarištva') were chosen for similar reasons (for details see Table G.5 in Appendix G).

Activities that one can do here (Rožnik in Šišenski hrib) that one cannot do in the city (multiple choice answers) Valid = 54 Missing = 1	**Frequency of activities undertaken at Rožnik**	**Percentages for all activities**
It's a good place for a walk where I can enjoy nature	49	23
I come here for active recreation (e.g. jogging, hiking, cycling, mountain biking)	37	17
Enjoy some peace and relaxation	35	16
Observe the wildlife	27	12
Walk the dog	20	9
It's a good place for a family outing	15	7
Play with children	14	6
Play sport games with friends (e.g. football, badminton, Frisbee)	6	3
Have a picnic/barbecue	7	3
It's a good place for learning about nature	7	3
Other	1	1
Total	218	100%

Table 6.3: The number of people who selected 'Rožnik in Šišenski hrib', as the peri-urban green space they visited most often, for various activities.

In Edinburgh, there was no one predominating peri-urban green space but several of them were visited equally frequently, approximately. Among the most visited spaces were: 'Portobello beach' (20,8%); while at 14%, the 'Union Canal from the City Bypass towards Ratho', the 'Water of Leith from Balerno to Slateford' and 'Cramond foreshore'. A significant number of respondents (16%) ticked 'Other', mainly, listed urban parks and semi-natural spaces, such as: 'The Meadows', 'Princes Street Gardens', and 'Arthur's Seat'. Figure 6.12, below, shows the most often visited peri-urban green spaces in Edinburgh.

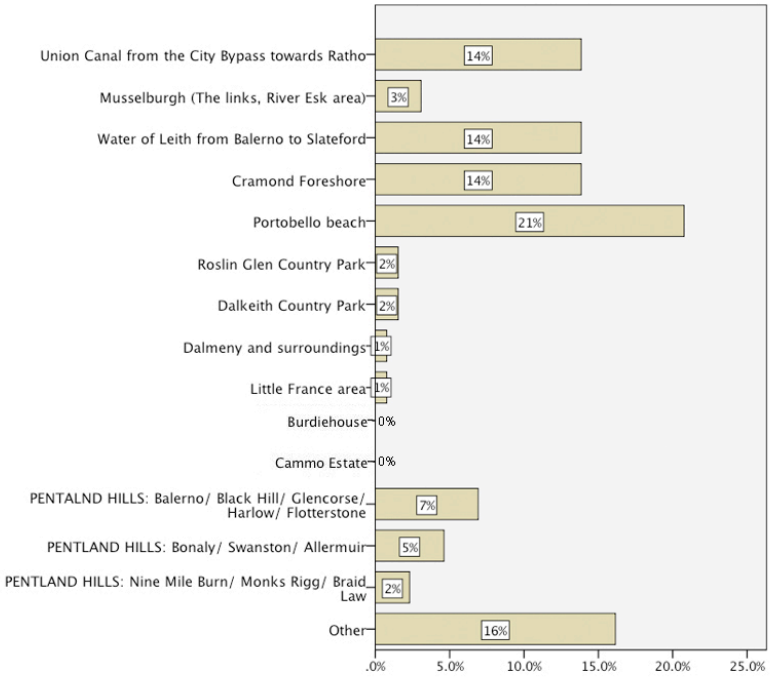


Figure 6.12: The green spaces in Edinburgh that are visited the most often.

There are some significant differences between both sets of respondents in terms of how they engaged in the peri-urban green spaces in their respective cities. Respondents from Ljubljana more frequently visited peri-urban green spaces to walk their dog there, and for active recreation, whereas the respondents from Edinburgh would visit those places to have a picnic or barbecue there, to learn about nature and for 'other reasons'. This category was selected by 13 respondents from Edinburgh (and none in Ljubljana) and generally pertained to them having specific personal reasons for their choice.

Ljubljana (N = 140) **Edinburgh** (N = 143) **p < 0,05**	It's a good place for a walk where I can enjoy nature	Observe the wildlife	Walk the dog	Enjoy some peace and relaxation	It's a good place for a family outing	Play with children	I come here for active recreation (e.g. jogging, hiking, cycling, mountain biking)	Play sport games with friends (e.g. football, badminton, Frisbee)	Have a picnic/ barbecue	It's a good place for learning about nature	Other
χ^2	5,448	1,416	18,685	3,689	2,124	1,712	19,139	0,772	8,995	7,828	8,275
p-value	0,020	0,234	0,000	0,055	0,145	0,191	0,000	0,380	0,003	0,005	0,004

Table 6.4: Chi-square Test – The differences between the respondents from Ljubljana and Edinburgh in terms of the activities they would undertake in peri-urban green spaces.

Activity in peri-urban green space **Ljubljana (N = 140)**	Mean Rank	Rank		Activity in peri-urban green space **Edinburgh (N = 143)**	Mean Rank	Rank
It's a good place for a walk where I can enjoy nature	9,06	1		It's a good place for a walk where I can enjoy nature	8,53	1
Enjoy some peace and relaxation	8,36	2		Enjoy some peace and relaxation	7,84	2
I come here for active recreation (e.g. jogging, hiking, cycling, mountain biking)	7,30	3		Observe the wildlife	6,76	3
Observe the wildlife	6,31	4		I come here for active recreation (e.g. jogging, hiking, cycling, mountain biking)	5,95	4
Walk the dog	5,92	5		It's a good place for a family outing	5,84	5
Friedman Test: χ^2 = 560,619; p-value = 0,000				**Friedman Test**: χ^2 = 354,120; p-value = 0,000		

Table 6.5: The ranking of respondents' preferences for activities when visiting peri-urban green space, by the case study city.

Differences according to age:

The Kruskal-Wallis test uncovered no significant differences, for both cities' respondents in relation to the type of peri-urban green space they preferred to visit.

However, there were some differences in the activities that people liked to enjoy there. In Ljubljana, working-age people were more likely to go to their preferred open space to observe wildlife and to play with children, whereas young people would go there for active recreation, to play sports games with friends, and to have a picnic or barbecue.

Whereas in Ljubljana young people's main preference seems to be to enjoy physical activities, in Edinburgh, conversely, young people would go to peri-urban green space to enjoy some peace and relaxation. The working-age group would choose it as a good place for a family outing and to play with children.

With regard to the frequency of visits, in both cases, respondents did not visit these places very often, as is shown in Tables 6.6 and 6.7, below. 'Never' was the option respondents ticked most frequently when answering how often they visited listed peri-urban green open spaces, with the exception being 'the beach' in Edinburgh, which most people go to 2 or 3 times a year, and 'other' in Ljubljana, with the same

frequency. 'Other' in Ljubljana mostly pertained to private gardens, weekend cottages, local gardens and parks.

Percentage of people who visit any of the places listed in the questionnaire	Every day	2 or 3 times a week	Once per week	2 or 3 times a month	Once a month	2 or 3 times a year	Less than once per year	Never
Ljubljana	1%	4%	4%	5%	8%	20%	18%	40%
Edinburgh	0%	1%	1%	3%	4%	19%	20%	51%

Table 6.6: Frequency of visiting the listed green open spaces, of people that visit peri-urban areas.

	Green space type	Every day	2 or 3 times a week	Once per week	2 or 3 times a month	Once a month	2 or 3 times a year	Less than once per year	Never
Ljubljana (%)	**Green corridors**	2	8	13	11	23	44	43	77
Edinburgh (%)		2	5	7	17	18	57	65	72
SUM (%)		1	3	4	6	9	22	23	32
Ljubljana (%)	**The beach/lake/water**	0	0	1	4	3	24	19	54
Edinburgh (%)		3	2	8	10	36	125	85	102
SUM (%)		1	0	2	3	8	31	22	33
Ljubljana (%)	**Country parks, countryside settlements and their surrounding areas**	0	1	1	2	3	18	29	54
Edinburgh (%)		0	0	0	5	4	26	59	140
SUM (%)		0	0	0	2	2	13	26	57
Ljubljana (%)	**Large sized, open spaces on the edge of the city**	8	35	27	43	67	184	170	351
Edinburgh (%)		1	0	1	0	2	19	36	275
SUM (%)		1	3	2	4	6	17	17	51
Ljubljana (%)	**Protected areas**	0	0	4	11	15	42	43	97
Edinburgh (%)		0	2	3	7	5	82	81	165
SUM (%)		0	0	1	3	4	22	22	47
Ljubljana (%)	**Urban green spaces/other**	8	15	16	11	13	31	19	23
Edinburgh (%)		1	1	4	6	6	13	15	115
SUM (%)		3	5	7	6	6	15	11	46

Table 6.7: Frequency of visits made to the listed green open spaces, grouped by green space type, for the two case studies.

Understanding the reasons why people visit peri-urban green open spaces so rarely is crucial to this thesis topic: therefore, the respondents were asked why they do not visit these spaces more often, with an option to choose any reason that applied to them.

As expected, the respondents in both cities ranked 'Lack of time' as the primary reason for not going to peri-urban green spaces more often. The second reason ('Too far from my home') achieved the same percentage in both cases. In third ranking, for the Ljubljana respondents, was 'I don't feel the need', while for Edinburgh's respondents, that reason achieved eighth place. In Edinburgh, however, in comparison with Ljubljana, 'There is no one to go with' ranked relatively highly.

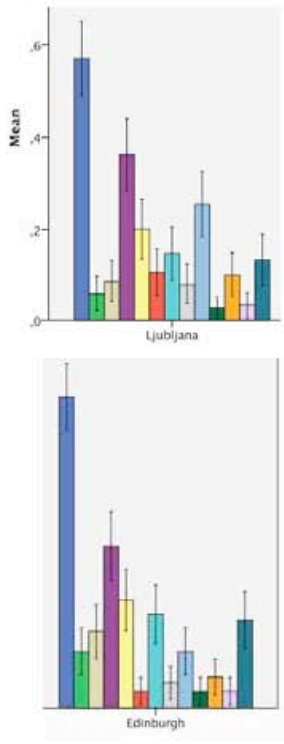
Ljubljana (N = 149)		Why don't you visit green, open spaces at the edge of the city more often?	Edinburgh (N = 160)	
Lack of time	57%		69%	Lack of time
Too far from my home (not easily accessible)	36%		36%	Too far from my home (not easily accessible)
I don't feel the need	26%		24%	Lack of good transport links (roads/cycle- & footpaths)
Lack of good transport links (roads/cycle- & footpaths)	20%		21%	Not accessible by public transport
Not accessible by public transport	15%		20%	Other
Other	13%		17%	There is no one to go with
I'm not interested in going there	11%		13%	Financial reasons
Lack of regulated parking spaces	11%		13%	I don't feel the need
There is no one to go with	9%		7%	I'm not interested in going there
I am too tired for activities of this type	8%		6%	I am too tired for activities of this type
Financial reasons	6%		4%	Lack of regulated parking spaces
Feels unsafe	3%		4%	Feels unsafe
Poor quality of the spaces	3%		4%	Poor quality of the spaces

Table 6.8: Ranked reasons for not visiting the peri-urban green open spaces more often, by the case study city.

Differences according to age:

When the reasons for not visiting green spaces more often were compared, in Ljubljana, 'Lack of time' was a reason, significantly more often reported by the working-age group, and 'Financial reasons' was cited least often by this group. The most significant reason for young people not visiting was 'Lack of good transport links', which is an important result since it is in line with the expectations that this age group may be constrained from accessing peri-urban spaces when they are not easily accessible by public transport.

In Edinburgh, 'Lack of time' was also the reason why the working-age group would not visit peri-urban spaces, whereas young people would not go there because there is no one to go with.

The reasons for not visiting peri-urban green space can be grouped into personal, transport/ infrastructure, and management reasons (Table 6.9). Presented in this way, the respondents' reasons did not differ considerably in both cases. Personal reasons predominated for not visiting peri-urban green spaces more often, yet, personal reasons are only about a half of all the reasons cited for not visiting these spaces more often. This means that almost 50% of the reasons for not visiting pertains to some sort of accessibility and management constraints, which is important information for this research. The almost equal percentages for both cities, in terms of transport/infrastructure, and of management reasons, show that despite the many differences between them in their structural, social and political priorities, etc., their care for the accessibility and management of peri-urban green spaces is given about equal weight by both councils in terms of their priorities related to these matters.

	PERSONAL (Lack of time; I don't feel the need; I'm not interested in going there; There is no one to go with; I am too tired for activities of this type; Financial reasons)	**TRANSPORT/ INFRASTRUCTURE** (Lack of good transport links (roads/cycle- & footpaths); Too far from my home (not easily accessible); Not accessible by public transport)	**MANAGEMENT OF GREEN SPACE** (Lack of regulated parking spaces; Feels unsafe; Poor quality of the spaces)	**Other**
Ljubljana	54%	33%	7%	6%
Edinburgh	52%	34%	6%	8%

Table 6.9: Reasons for not visiting peri-urban green spaces more often, by the case study city.

With regard to visits made to peri-urban green open spaces with other people or alone, the Chi-square test showed a highly significant difference between the two cities (Chi-square test: χ^2 = 27,555; p-value = 0,000). The respondents from Ljubljana were more likely to go to peri-urban green open space alone, while, the respondents from Edinburgh, on the other hand, preferred to go there with their friends and/or family.

This information highlights some outcomes in relation to why some respondents do not visit peri-urban green spaces more often (see Table 6.8): respondents from Ljubljana had no barriers to visiting on their own whilst the respondents from Edinburgh would not go for a visit unless they had company to do so.

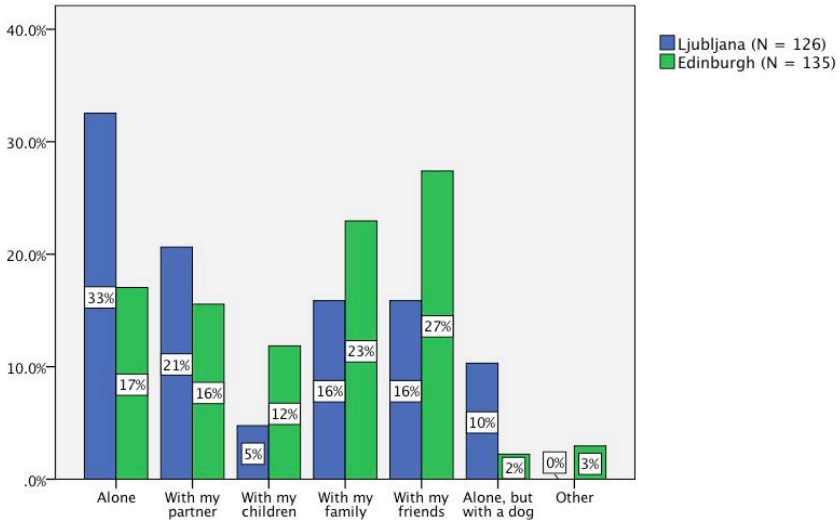


Figure 6.13: Visits made to peri-urban green open spaces with other people or alone, by the two case studies.

At the end of the second part of the questionnaire, respondents were also asked some open-ended questions pertaining to the management of, and their satisfaction with, the peri-urban green open space they visited most often.

Twenty per cent of respondents in Ljubljana and 16% in Edinburgh noticed some changes being made to their chosen open space. These were mainly related to the improvement of the area, such as: more benches, newly planted trees, more bins,

improvement of paths, etc. Reported negative changes were: more cars, destroyed signage, trees have been cut, more rubbish, etc. Interestingly, in both cities, almost half of the respondents (48% in Ljubljana and 42% in Edinburgh) would like to see some kind of changes being made to this open space. These changes largely pertained to accessibility (e.g. better cycling paths, better access by bus, better linkages at the area, etc.) and management of the area (e.g. signage, improved tidiness, more lighting, more bins, no cutting of trees, picnic places, maintenance of benches, etc.). These results emphasise the reasons for not visiting peri-urban green spaces more often; it can be argued that low accessibility and poor management of these areas puts people off from visiting peri-urban green open spaces.

Furthermore, in Ljubljana, almost half of the respondents (47%) stated that there should be more open green space in the city, in particular, they would like to have more picnic places, cycle paths, green corridors, small local parks, green areas for recreation, and large green areas. Having a picnic or a barbecue was cited among the reasons for visiting peri-urban green spaces, and it was one of the significant differences between the two cities, with the respondents from Edinburgh more likely to go to peri-urban green open space for this activity. Clearly, the respondents from Ljubljana would also like to do so, but there is no opportunity for it (i.e. picnic places).

In Edinburgh, the percentage of respondents who thought that Edinburgh needs more green open spaces was slightly lower (32%) and pertained mostly to their wish to see improved cycle paths (access, connectivity and markings), more green corridors, and more general information on where public parks and other green areas are located.

The last question in this part of the questionnaire was related to future management of peri-urban green open spaces. Respondents had to rank four statements on the scale 1-6, where 1 meant ‘Completely disagree’ and 6, ‘Completely agree’. In both cities, the majority of people agreed that these areas should not be used for further housing or office expansion and that priority green spaces for maintenance should be identified. However, there was a significant difference in the answers to the other

two statements: respondents in Ljubljana seem to be more passionate about keeping these areas green and natural (see Table 6.10 for details).

	These areas should be kept green and sparsely built. Ljubljana (N = 155) Edinburgh (N = 161)	**These areas should be kept in a natural state.** Ljubljana (N = 150) Edinburgh (N = 159)	**These areas could be used for further housing or office expansion.** Ljubljana (N = 143) Edinburgh (N = 157)	**Priority green spaces should be identified and required to be well maintained.** Ljubljana (N = 142) Edinburgh (N = 159)
Mean	4,43	4,31	1,60	4,25
Mann-Whitney U Test	9470,000	9874,000	10423,000	10548,500
Z	-4,249	-2,867	-1,223	-1,068
p-value	0,000	0,004	0,221	0,286

Table 6.10: Mann-Whitney U Test – The attitudes towards the future management actions of peri-urban green open spaces, for the two case study cities.

6.1.3 The travel characteristics cited by respondents when getting to peri-urban green spaces

I. Owning a car, a driving licence, a bus ticket and a bicycle:

Table 6.11, below, indicates the differences in choice of transport made by respondents in both cities.

Ownership of: (N = 329; multiple choice answers)	**N**	**χ^2**	**p-value**	**Trend**
Driving licence	239	16,291	0,000	Ljubljana +
Car	176	28,953	0,000	Ljubljana +
Bicycle	192	15,254	0,000	Ljubljana +
Monthly ticket for the bus (city and/or surroundings)*	83	34,492	0,000	Ljubljana +
Motorcycle	10	1,778	0,182	/
None of the above	39	20,290	0,000	Edinburgh +
*In Ljubljana, it is possible to buy three types of bus ticket: a monthly ticket for a city bus; a monthly ticket for a city bus and surrounding areas; a monthly combination bus ticket.				

Table 6.11: Chi-square Crosstabs test – The significant differences, between both cities, in respondents' choice of transport.

Differences according to age:

The Chi-square test revealed that the younger respondents from Edinburgh were less likely to hold a driving licence and, accordingly, have a car, whereas the young respondents from Ljubljana were unlikely to have a car, but they would hold a driving licence. Of the three age groups, the older respondents from Ljubljana were least likely to have a bicycle. The older respondents from Edinburgh were more likely to have a bus ticket, when compared with the other two age groups (for details see Table G.8 in Appendix G).

II. Cycling preferences and characteristics:

Table 6.12, below, shows that cycling is much more popular in Ljubljana than in Edinburgh. The cycling characteristics of both cities' respondents produced highly significant differences ($p < 0,01$) when: using a bicycle for leisure, riding to work, shopping, and business. In all cases, the trend was positive for Ljubljana's respondents. Ljubljana and Edinburgh shared similarities in terms of the percentage of respondents who rode a bicycle to university/school, which indicates that cycling is popular among the younger generations, whereas older people tend to use other means of transport.

Ljubljana (N = 153; multiple choice answers)		**Edinburgh** (N = 149; multiple choice answers)	
Leisure (visiting friends, the cinema, etc.)	52%	Do not use	44%
Recreation/sport	38%	Leisure (visiting friends, the cinema, etc.)	36%
Riding to work	35%	Recreation/sport	33%
Shopping	31%	Riding to work	17%
Do not use	27%	Shopping	11%
Riding to the university/school/to get where I study	12%	Riding to the university/school/to get where I study	10%
Official/business	9%	Other*	2%
Other*	4%	Official/business	1%
*The most relevant responses included: always using a bicycle and for all listed activities (mentioned several times); hiring a bike for leisure activities; too old to use a cycle; and for transporting children.			

Table 6.12: Activities for which respondents would most often use a bicycle, for each case study city.

Table 6.13, below, indicates the measures that need to be undertaken to enhance the attractiveness of cycling to the respondents. The results indicate that people consider improving the cycling infrastructure in urban areas as more necessary than, for example, the infrastructure in rural or peri-urban areas, and the introduction of measures to control traffic is also important to them.

Ljubljana (N = 153; multiple choice answers)			**Edinburgh** (N = 138; multiple choice answers)	
Cycle paths in urban areas	84%		Cycle paths in urban areas	71%
Cycle lanes on roads	54%		Cycle lanes on roads	52%
Cycle paths along country roads	52%		Cycle paths along country roads	41%
Traffic-calming zones	33%		Greater speed control of trucks and cars	25%
More cycle parking racks	25%		More cycle parking racks	20%
Greater speed control of trucks and cars	16%		Other*	15%
Other*	6%		Traffic-calming zones	9%
*The most relevant responses included: In Edinburgh: a city bike scheme (mentioned several times); better marked routes; smooth roads (no potholes, cobblestones, etc.) (mentioned several times), enforcement of driving standards; car-free zones; dedicated cycle lanes (mentioned several times); possibility of taking a bicycle on a bus; In Ljubljana: dedicated cycle lanes (mentioned several times); to allow cycling in public parks; car-free zones in the city centre; penalties for parking on cycle lanes.				

Table 6.13: Measures that would enhance the attractiveness of cycling, for each case study city.

III. Preferences and characteristics in travelling to (peri-urban) green spaces:

The respondents were primarily asked about the time they would be willing to travel to access green space types because this information was needed to calculate a Structural Accessibility Layer (see Section 5.1.6 for details). The results from both cities were almost the same. This indicates that travel time to green spaces is related to green space type, but is independent of the local characteristics of the city, such as the city's size, its morphology, urban structure, the quality or quantity of infrastructure network, etc.

		Small local parks and informal green areas	Large urban parks	Play spaces for children and young people	Allotments, community gardens	Sports fields/ open spaces	Large sized, open spaces on the edge of the city	Protected areas	Marsh/ wetlands	Green corridors	Cemeteries, churchyards	Country parks, countryside settlements and their surrounding areas
LJUBLJANA	N	141	148	96	62	91	127	102	85	113	113	105
	Mean	2,38	3,45	2,48	3,02	3,45	4,77	5,37	5,02	3,50	4,39	5,86
	Approx. mins	**12 mins**	**17 mins**	**12 mins**	**15 mins**	**17 mins**	**24 mins**	**32 mins**	**30 mins**	**18 mins**	**22 mins**	**35 mins**
EDINBURGH	N	146	162	104	71	89	139	127	168	132	98	129
	Mean	2,47	3,79	3,04	2,99	3,81	5,08	5,83	9997,00	3,77	3,42	5,75
	Approx. mins	**12 mins**	**19 mins**	**15 mins**	**15 mins**	**19 mins**	**30 mins**	**35 mins**	/	**19 mins**	**17 mins**	**35 mins**

Table 6.14: The time the respondents would be willing to travel to specific green space types, for each case study city.

In addition to this hypothetical question about travel time, respondents were also asked about their real travel time in relation to the peri-urban green space they visited most often. The results showed that Edinburgh respondents travelled significantly further to the peri-urban green space they visited most often (Mann-Whitney U Test = 7841,500; Z = (-3,372); p-value = 0,001). Whereas in Ljubljana, almost a quarter of respondents (24%) did not need to, since they could access the peri-urban green space they visited most often in approximately 15 minutes. In the questionnaire, large numbers of people selected 'Rožnik in Šišenski hrib' as the peri-urban green space they visited most often. Rožnik is a green wedge, which extends from the city centre to its boundaries, and is easily and quickly accessible from the city centre. In Edinburgh, however, peri-urban green spaces are clearly separated from the urban ones. Hence, people need more time to access peri-urban space, which explains the longer time Edinburgh respondents needed to reach the peri-urban green space they visited most often. The mean values were 3,43 for Ljubljana (i.e. approx. 17 minutes) and 4,08 for Edinburgh (i.e. approx. 22 minutes).

Furthermore, in both cities, the highest percentage of respondents visited green space in the afternoon, from 1pm to 6pm. As to what was the starting point of their visit, the majority ticked 'home', with 97% in Ljubljana and 94% in Edinburgh.

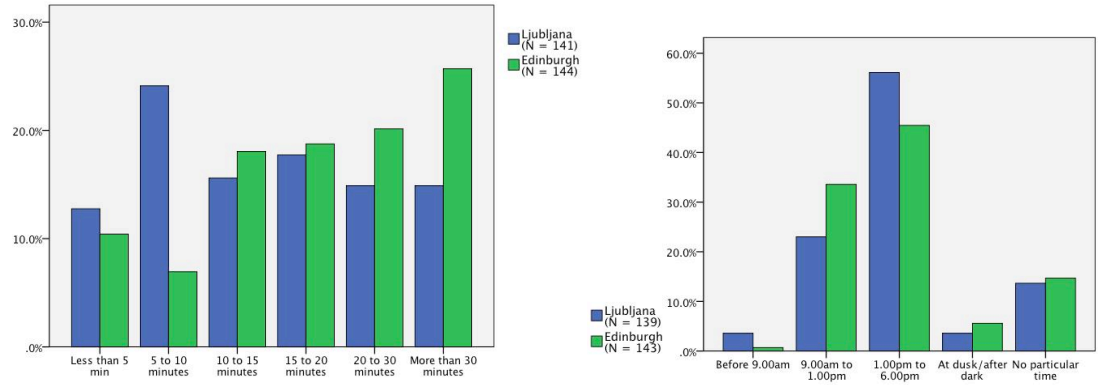
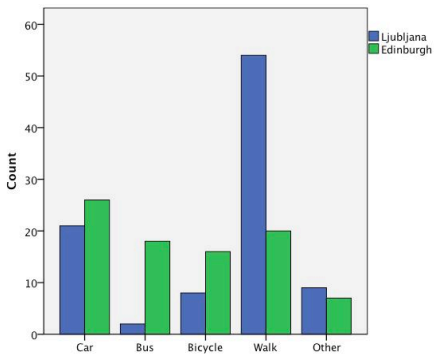


Figure 6.14: Respondents' travel time and the time of day when they went to the peri-urban green space they visited most often, for each case study city.

Most of the respondents in Ljubljana (57%) walked to the green open space they visited most often, whereas in Edinburgh, 30% drove there. These results could be linked to the explanation, given above, about the close location of the peri-urban green space visited most often to the homes of the respondents in Ljubljana. On this point, it should be noted that in relation to the means of transport to peri-urban space, the respondents from Edinburgh reported a more equally distributed modal split whilst in Ljubljana, the proportions were considerably different (see Table 6.15).



Ljubljana (N = 94)	Frequency			**Edinburgh** (N = 87)	Frequency	
Walk	54	57%		Car	26	30%
Car	21	22%		Walk	20	23%
Other	9	10%		Bus	18	21%
Bicycle	8	9%		Bicycle	16	18%
Bus	2	2%		Other	7	8%
X^2 = 31,647; p-value = 0,000						

Table 6.15: Means to go to respondents' most often visited peri-urban green space, for each case study city.

Among the deciding factors, in relation to people's choice of transport when accessing peri-urban green space, for the respondents from both cities, they were ranked similarly (see Table 6.16). Interestingly, the time available did not rank highly for respondents in either city, although a lack of time was the top reason cited as to why respondents did not visit peri-urban green spaces more often. Accordingly, the respondents would not choose a specific transport means in order to get to their preferred open space more quickly. On this basis, the importance of the way *to* get there can be assumed.

Ljubljana	N	Mean Rank		Edinburgh	N	Mean Rank
Current weather conditions	109	3,84		Current weather conditions	127	3,77
The season (spring, summer, autumn, winter)	107	3,84		Distance from the green space	130	3,65
Distance from the green space	110	3,76		How much time I have	132	3,64
How much time I have	101	3,71		The purpose of my visit	121	3,43
The purpose of my visit	109	3,17		The season (spring, summer, autumn, winter)	125	3,4
Transport availability	102	2,93		Transport availability	132	3,28
My mood	105	2,86		My mood	122	3,07
My children	91	2,01		Financial reasons	125	2,49
Financial reasons	101	1,9		My children	118	2,46
1 = Never; 2 = Rarely; 3 = Sometimes; 4 = Often; 5 = Always						

Table 6.16: Deciding factors in terms of respondents' choice of transport when planning a visit to peri-urban spaces, for each case study city.

Differences according to age:

In Edinburgh, the younger group would mostly choose their transport means according to their mood (Kruskal-Wallis test: $\chi^2 = 10{,}858$; p-value = 0,004) and were least likely to say because of their children (Kruskal-Wallis test: $\chi^2 = 30{,}155$; p-value = 0,000), which is reasonable since this age group, mostly, did not have any children. In Ljubljana, transport availability was a significant reason for the older group (Kruskal-Wallis test: $\chi^2 = 7{,}563$; p-value = 0,023), which is an important fact since it shows that this age group is dependent on the transport means they could or would use to go to the peri-urban green space they would visit most often.

IV. Management with regard to facilities of (peri-urban) green spaces:

The respondents from both cities were very satisfied with public transport access to the peri-urban green spaces they visited most often, although some significant differences were found between the two cities, as can be seen in Table 6.17, below (and Table G.7 in Appendix G).

Ljubljana	N	Mean Rank		Edinburgh	N	Mean Rank
Cycle routes and footpaths from your home to this site	128	3,53		Accessibility by public transport	116	3,45
Accessibility by public transport	104	3,51		Information boards and signage ON the site	123	3,35
Maintenance/quality of cycle routes and footpaths	117	3,51		Maintenance/quality of cycle routes and footpaths	114	3,28
Information boards and signage ON the site	113	3,45		Information boards and signage TO the site	119	3,23
Lighting	103	3,3		Parking	118	3,21
Parking	107	3,00		Lighting	113	3,2
Play equipment for children	94	2,96		Play equipment for children	114	3,18
Information boards and signage TO the site	108	2,92		Cycle routes and footpaths from your home to this site	114	3,14
Facilities provided (=toilets, bins, seating, drinking water)	123	2,84		Facilities provided (=toilets, bins, seating, drinking water)	126	3,00
1 ----------5 Very dissatisfied Very satisfied						

Table 6.17: The level of satisfaction with the maintenance of, and access to respondents' most often visited peri-urban green space, for each case study city.

6.2 Predictors of accessibility

This section aimed to uncover which variables could be predictors of accessibility to peri-urban green open spaces. Specifically, the aim was to address the research question, 'How do perceptions of access by means of transport affect usage?' This was done, first, with Chi-square, Mann-Whitney and Kruskal-Wallis tests in order to uncover any possible significance between the variables. Second, logistic regression was used to uncover which variables are the predictors of peri-urban green spaces' frequencies of use. The details are listed in Appendix G.2.

6.2.1 Matters relating to accessibility to green open spaces

Which variables, related to accessibility, are predictors of frequency of visits to specific green space types?

The respondents from both cities who visited small parks the most would most likely not go to peri-urban green space because those are not accessible by public transport. In addition, for the respondents from Edinburgh, the season would most likely be a deciding factor when choosing a transport means to go to peri-urban green space (see Table G.21 in Appendix G).

The Ljubljana respondents who visited large urban parks most frequently were the most satisfied with the parking options when visiting their preferred peri-urban green open space. For those who had visited play spaces for children and young people, the distance to green space was significantly far more of a deciding factor when choosing the transport means to get to the peri-urban green space.

The Ljubljana respondents who most frequently visited protected areas reported the purpose of their visit as a deciding factor when choosing their transport means to go to peri-urban green space whilst other factors – transport availability, current weather conditions and distance to green space – were not decisive for them. In Edinburgh, conversely, transport availability was a significant factor when choosing a transport means to gain access to peri-urban open spaces, whilst the season and having children were not significant. Furthermore, in Ljubljana, the respondents who visited protected areas strongly agreed that peri-urban areas should be kept green and sparsely built. They also bond with peri-urban places more, in relation to the rest of the respondents.

The Ljubljana respondents who visited green corridors most frequently also reported the purpose of their visit as often being a deciding factor when choosing a transport means to get to peri-urban green space. In Edinburgh, for those visitors, the season, and accessibility by public transport were the least decisive factors. They were also significantly more satisfied with the accessibility to and management conditions of

those places, in comparison with the respondents who visited green corridors less frequently.

Would having a car/bike/bus influence going to large sized, open spaces on the edge of the city?

The Chi-square test revealed that in Ljubljana, the respondents who owned a bicycle visited large sized, green open spaces on the edge of the city significantly more than those who did not own a bicycle.

Would the respondents who had a car be willing to spend more or less time in travelling to any type of green space, in relation to those who did not have a car?

Having a car did not seem to affect the amount of time respondents were willing to spend travelling to any type of green space, in either city.

Would the means of transport respondents used most often to visit peri-urban green space influence the amount of time spent in getting there?

A significant difference was found only in Ljubljana: the respondents with a bus pass spent more time in travelling to the peri-urban green space they visited most often (see Row 1, Table G.14 in Appendix G).

Is there any relationship between going to a preferred peri-urban green open space for active recreation and owning a certain means of transport (e.g. a car, bicycle, bus pass)?

In both cities, the respondents who had a bicycle went to peri-urban green spaces for active recreation significantly more than the respondents who did not own a bicycle (see Row 1, Table G.15 in Appendix G).

How satisfied are people who use a bicycle, in getting to the peri-urban green space they visited most often, with the cycle routes and footpaths that run from their home to the site?

No significant difference was found, in either city, in terms of respondents' satisfaction with the cycle routes and footpaths, when comparing the respondents who used a bicycle and those who used a car to get there (see Row 1, Table G.16 in Appendix G).

Would using a bicycle for recreation influence the transport means that the respondents used to get to peri-urban green space?

No (see Rows 2 and 3, Table G.16 in Appendix G).

Is there any relation between respondents' preferred type of peri-urban green space and walking, as a way to get there?

In Ljubljana, the respondents were most likely to walk to large sized, open spaces on the edge of the city whilst in Edinburgh, the respondents were most likely to walk to green corridors (see Row 4, Table G.16 in Appendix G).

Is there any relation between transport availability and the peri-urban green space types visited most often?

No significant difference was found in either city (Chi-square test). However, in general, transport availability would be a deciding factor for Edinburgh respondents more often than for those in Ljubljana, in visiting any type of peri-urban green space.

Would car ownership influence respondents' attitude to the peri-urban green open space they visited most often?

The Mann-Whitney test showed that in Edinburgh, the respondents who owned a car felt more rooted in their preferred peri-urban green space. This could be argued by the fact that, in general, people get a car only after they have been living in one place for a while or when they do not plan to move away in the near future (see Rows 19-21, Table G.20 in Appendix G). However, it should be noted that the frequency of visiting the preferred peri-urban open space, between people who owned a car and those who did not own one, was not great (car owners: Mean = 5,30; people with no car: Mean = 5,81; on a scale 1-8 where 5 was 'Once a month' and 6 was '2 or 3 times a year').

Would demographic characteristics (age/education/gender) influence which transportation means the respondents would use to get to peri-urban green space?

The results of the Chi-square test showed that in Ljubljana female respondents were more likely to walk or take a car to get to peri-urban green space, compared with male respondents. No significant gender difference was found among the Edinburgh respondents. In terms of education, there was no significant difference in using transport means to access peri-urban green space in either city. However, highly educated respondents from Edinburgh listed a lack of time as a reason for not visiting peri-urban green spaces significantly more often than other respondents. At the same time, highly educated respondents were also the least interested in going there (see Table G.18 in Appendix G). No other significant constraints for visiting were found (e.g. financial reasons, reasons related to transport, etc.)

Does having one or more children influence the means of transport that the respondents used to get to the peri-urban green space they visited most often?

The Chi-square test revealed no significance difference, in either city.

Is there any relation between owning a second house and the frequency of visits paid to peri-urban green spaces?

Contrary to expectation, owning a second house did not seem to affect the likelihood of visiting peri-urban green spaces (i.e. large sized, open spaces on the edge of the city, green corridors; visiting green spaces on the edge of the city) in either city. In addition, in Ljubljana, owning a second house, interestingly, did not affect visiting play spaces for children and young people, and countryside settlements and their surrounding areas (see Table G.10 in Appendix G).

Furthermore, Ljubljana respondents who did not own a second house felt more strongly that the peri-urban green space they visited most often is their favourite place. They also liked it because there were friendly people around. In Edinburgh, people without a second house appreciated peri-urban open space because of its open fields. These results suggest that the respondents who did not have a second house

bond with the peri-urban green space they visited most often more than those who had a second house. However, even if they bonded with it more, they would not go to visit it more often, as reported in the paragraph above.

5.2.2 Respondents' perceptions and attitudes to peri-urban green space

Did the respondents favour any particular type of peri-urban green space?

The Chi-square test revealed no significant difference for either city (see Table G.12 in Appendix G).

Would going to their preferred peri-urban green open space for active recreation influence respondents' attitude to the peri-urban green open space they visited most often?

In Ljubljana, no significant difference was found between the people that went to peri-urban green space for active recreation and those who did not go there to do that. In Edinburgh, conversely, the respondents who went to peri-urban green space for active recreation felt that this was the best place for doing the things that they enjoyed the most and that there were not any features of this place that annoyed them. They also cared about the future of this place, more than the respondents who did not go there for active recreation (see Rows 9-11, Table G.15 in Appendix G).

Which variables are the predictors of 'not feeling the need to visit peri-urban open space'?

Contrary to expectation, 'not feeling the need' was not a significant reason for not visiting peri-urban green spaces for the respondents who owned a second house and who would rather spend their free time there. In addition, living in a house with a garden or having access to some other kind of private green space did not have any significant influence on respondents either. In fact, in both cities, the respondents who did not feel the need to visit peri-urban open spaces felt strongly that these areas could be used for further housing or office expansion. People who did not tick this reason felt more strongly that these areas should be kept green and sparsely built (see

Rows 1-3, Table G.17 in Appendix G). This suggests that the respondents who did not feel the need to visit those places also seem not to care for them.

6.2.3 Logistic regression analysis

Binary logistic regression was conducted to evaluate which variables best predicted frequency of use of peri-urban green space.[73] Given the fact that peri-urban green spaces are not immediately to hand for most people who live in a city, the dependent variable, 'frequency of use', was divided for the logistic regression into: 'visiting once per month or more' and 'visiting less than once per month'. This was reinforced by the mode value of frequencies, which was '2 or 3 times a year', in both cases.

The independent variables included in the model were grouped in blocks, indicating: affordance of landscape features and activities; accessibility characteristics; and perceptions/barriers to visiting. Demographic characteristics were not included since none of them was shown to be significant Using Mann-Whitney U test, Kruskal-Wallis test and Chi-squared tests as a screening.

Mann-Whitney U Test and Chi-square Cross-tabs test were used prior to the regression analysis. Only the predictors reaching significance at $p < 0.05$ were included in the model. They are listed in Table 6.18, below.

Predictors	Test	Significance in visiting peri-urban green spaces once per month or more (p-value < 0.05)
Block 1: LANDSCAPE FEATURES AND ACTIVITIES		
I come here for active recreation.	CS	Yes (p = 0.043)
These areas should be kept green and sparsely built.	MW	Yes (p = 0.005)
These areas should be kept in a natural state.	MW	Yes (p = 0.034)
These areas could be used for further housing or office expansion.	MW	Yes (p = 0.012)
This place is my favourite place to be.	MW	Yes (p = 0.013)
This place makes me feel as if I can be myself.	MW	Yes (p = 0.001)
I know this place inside out.	MW	Yes (p = 0.000)
I like this place because there are friendly people around.	MW	Yes (p = 0.005)

[73] The complete procedure of logistic regression analysis can be found in Appendix G.3.

I'm not moving away from this part of Ljubljana/Edinburgh in the near future.	MW	Yes (p = 0.017)
This place and its surroundings have many local history and cultural features.	MW	Yes (p = 0.017)
This place and its surroundings are important most of all for their forests and water features.	MW	Yes (p = 0.009)
Block 2: ACCESSIBILITY/TRANSPORT		
Having a driver's licence	CS	Yes (p = 0.03)
Having a bicycle	CS	Yes (p = 0.025)
Having no means of transport	CS	Yes (p = 0.007)
Establishment of traffic-calming zones in order to make cycling more attractive	CS	Yes (p = 0.035)
Block 3: PERCEPTIONS/ BARRIERS		
I am not interested in going there.	CS	Yes (p = 0.022)
MW = Mann-Whitney U Test; CS = Chi-square Crosstabs test		

Table 6.18: Variables used in logistic regression model, to predict respondents' frequency of use of peri-urban green space.

The binary regression model showed a successful classification rate of 72,7%. However, only one predictor appeared to be significant: 'I know this place inside out', indicating that people who visited peri-urban green space more than once per month, know this place better, which is quite logical.

The same predictors were tested for each set of respondents from each case study city. According to this analysis, none of the tested predictors for Ljubljana was significant. For Edinburgh, the following predictors were shown to be significant:
I come here for active recreation;
This place makes me feel as if I can be myself;
I know this place inside out;
I'm not moving away from this part of Edinburgh in the near future.

Regression analysis showed that the means of transport was not significant when visiting peri-urban green spaces. It can be argued that landscape characteristics are more likely to play an important role in a deciding which more distant, green space to visit, than the means of transport to get to the green space.

6.3 Respondents' perceptions of, and preferences for, the peri-urban green space they visited most often

The third part of the questionnaire aimed to gauge respondents' sense of place or, in other words, to explore how people bond with the peri-urban green open space they visit most frequently, which they had selected in the previous part of the questionnaire.[74] Accordingly, the respondents had to rank 19 statements, which referred to the peri-urban green open space they visited most often, on a 5-point Likert scale. Their answers were analysed using factor analysis in order to reduce the number of variables and to identify factors which could contribute to gaining a better understanding of respondents' sense of place, in both cities. In addition, the results of both cities were compared.

In the experimentation process, two extraction methods, principal component and principal axis factoring, were used, both on the basis of Eigenvalues above 1. Coefficients of absolute value below 0.30 were suppressed. Then, the results were rotated and clustered using Varimax[75] with Kaiser Normalization and Direct Oblimin method, respectively.

The experimentation with two methods and two rotation possibilities revealed the principal axis factoring with Direct Oblimin as being the most meaningful for the purpose of this thesis. However, it should be noted that the anti-image correlation matrix, in the Ljubljana case study, showed that the sampling adequacy, in two variables ('I care about the future of this place' and 'This place and its surroundings have many local history and cultural features'), was not greater than 0.5. Accordingly, these variables were eliminated from further analysis.

[74] See Section 5.1.2.1 for the details on the questionnaire design.
[75] In varimax rotation there is no correlation between factors whereas in oblimin rotation factors are believed to be correlated.

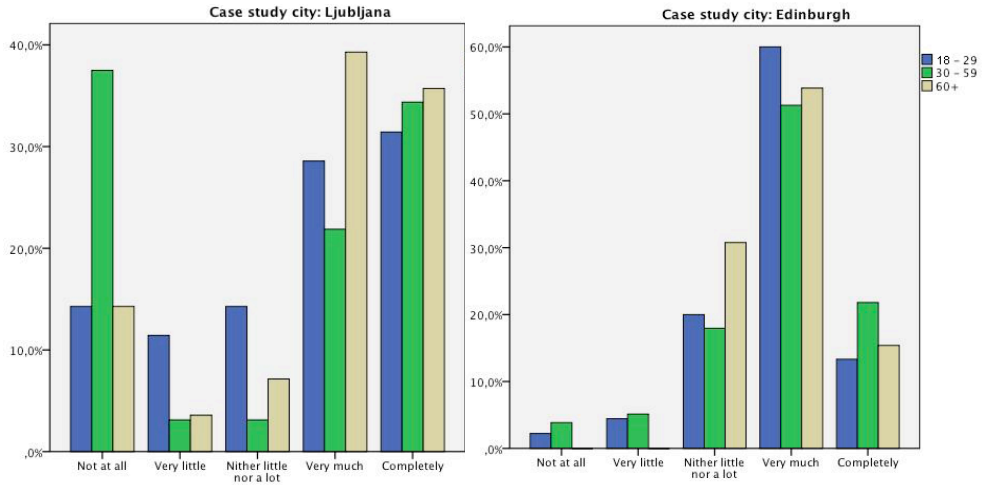


Figure 6.15: Respondents' ratings of the statement: 'I care about the future of this place', for both case study cities, by the three age groups. In Ljubljana, the sampling adequacy of this statement was not sufficient and thus this statement was not included in the analysis.

The results revealed seven sense of place components in Ljubljana and five in Edinburgh (for details see Appendix G.4). On the basis of item loadings, only the primary loadings on the factor with values above 0.6 were considered; the rest were ignored, due to uncleanness of the data. In Edinburgh case, there were no primary loadings on the factor 4, and so the final sense of place components in Edinburgh were only four, and not five. Tables 6.19 and 6.20, below, show the variables that clearly correspond to individual factors.

Outcome factors for Ljubljana						
1	2	3	4	5	6	7
I feel relaxed when I am there.	My roots are here.	I really miss this place when I'm away.	This place and its surroundings are important most of all for its open fields.	This place makes me feel as if I can be myself.	There aren't any features of this place that annoy me.	I like this place because there are friendly people around.
I feel happiest when I am there.	I have spent the majority of my childhood here.					

Place identity
Place dependence
Rootedness
Social environment
Physical surroundings

Extraction Method: Principal Axis Factoring.
Rotation Method: Oblimin with Kaiser Normalization.

Table 6.19: Ljubljana – The outcome factors of the factor analysis. Only primary loadings on the factor with values above 0.6 were considered.

Outcome factors for Edinburgh				
1	2	3	4	5
This place makes me feel as if I can be myself.	My roots are here.	I feel as if I'm able to move freely in this place.	NO PRIMARY ITEM LOADINGS WITH VALUES ABOVE 0.6!	I feel happiest when I am there.
This place is the best place for doing the things that I enjoy the most.	I have spent the majority of my childhood here.			

Place identity
Place dependence
Rootedness
Social environment
Physical surroundings

Extraction Method: Principal Axis Factoring.
Rotation Method: Oblimin with Kaiser Normalization.

Table 6.20: Edinburgh – The outcome factors of the factor analysis. Only primary loadings on the factor with values above 0.6 were considered.

The outcome factors were then compared with the preliminary set of components of sense of place, which were based on the findings of Jorgensen and Stedman (2001), Deutsch et al. (2011), Soini et al. (2012), and Semken et al. (2009). The main purpose was to see how the factors that were the outcome of this analysis, matched with the pre-set components, and to uncover if there were any new factors.

The factor analysis revealed an interesting result, when comparing the respondents from both cities' perceptions of **place identity** and **place dependence**, respectively. Ljubljana respondents clearly discriminated between place identity and place dependence. The results of Edinburgh's sample, conversely, were less clean; high cross loadings indicated a high degree of overlap between the two concepts (i.e. place identity and place dependence). These results suggest two conclusions. First, place identity and place dependence, two concepts of a sense of place that have been constants in environmental psychology research, share some common characteristics and may be interpreted as two sides of the same coin. This can be confirmed with the Edinburgh sample, where the first factor contained a mix of both components. However, Ljubljana's sample showed that both components have some discriminating characteristics. This points to the second conclusion, that place identity and place dependence both have overarching differences in terms of the relationships that exist between human beings and their environment.

As mentioned earlier, the statements used in this research were taken from previous research findings on the empirical investigation of sense of place concepts. Jorgensen and Stedman's (2001) empirical study aimed to clarify the confusion about the relationship between sense of place concepts, and the interrelationships between them. This study adopted Jorgensen and Stedman's indicators of sense of place components but it has been unable to demonstrate that the statements, which were used by them, are illustrative enough and thus a useful tool to discriminate between place identify and place dependence. It can be argued that quantitative approaches to measuring sense of place components need further refinements and adjustments, respectively, in empirical investigations.[76] Alternatively, the Ljubljana sample may be discussed in relation to the bipartite model of sense of place (SOP), where each component is presented as a specific construct and the model indicates great variations of the components within individuals (Jorgensen and Stedman, 2001). The Edinburgh sample may be explained with the single factor model (Jorgensen and Stedman, 2001, p.238) since both components are indistinguishable and, finally, merge into one.

Jorgensen and Stedman argued that place dependence can be negative, saying "that a place limits the achievement of valued outcomes" (Jorgensen and Stedman, 2001, p.234). The mean values of the three statements that measured place dependence, in this study's questionnaire, did not reveal the strong affections of the respondents, either negative or positive. However, in both cases, there was a tendency towards negative placements: the respondents were not likely to miss this place when they were away and they felt *very much* that there are better places to be than this place.

Rootedness was the most clearly expressed component of sense of place, in both cases, indicating that the respondents had a clear perception of whether they belong to the place or not. However, the mean values showed that, in both cases, but especially in Edinburgh, the respondents did not feel very rooted in the peri-urban green space they visited most often and the wider environment, respectively.

[76] The researcher is aware of factor analysis' reliability not being considerably high (i.e. Cronbach's α = 0.664 (Ljubljana) and Cronbach's α = 0.779 (Edinburgh)).

Social environment and physical surroundings were, especially in Edinburgh's case, loading across factors, and no correlation could be found between both cases. These results suggest that individuals had very varied experiences in relation to the peri-urban green space they visited most often. The frequency distribution bars, by age group, for each city, showed a variety of opinions (Figures 6.16-6.19 present answers to some of the statements). For example, whilst the majority of older respondents from Ljubljana were certain that they are not moving away from the city, the same age groups from Edinburgh felt much less settled in their current residence. Furthermore, the younger group from Ljubljana was the unhappiest with the current state of the peri-urban green space in question. In addition, they were also annoyed with some features of the place. Finally, the respondents from both cities felt that they can move in this place without any restrictions, although that was the least likely view of the younger group, suggesting that this age group is looking for higher levels of freedom than the other two.

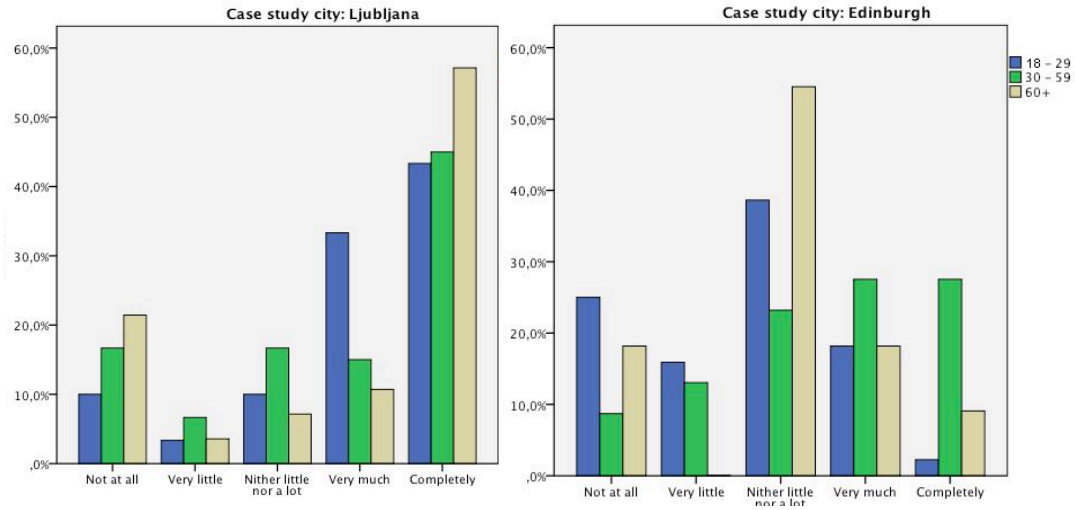


Figure 6.16: Respondents' ratings of the statement: 'I am not moving away from this part of Ljubljana/Edinburgh in the near future', for both case study cities, by the three age groups.

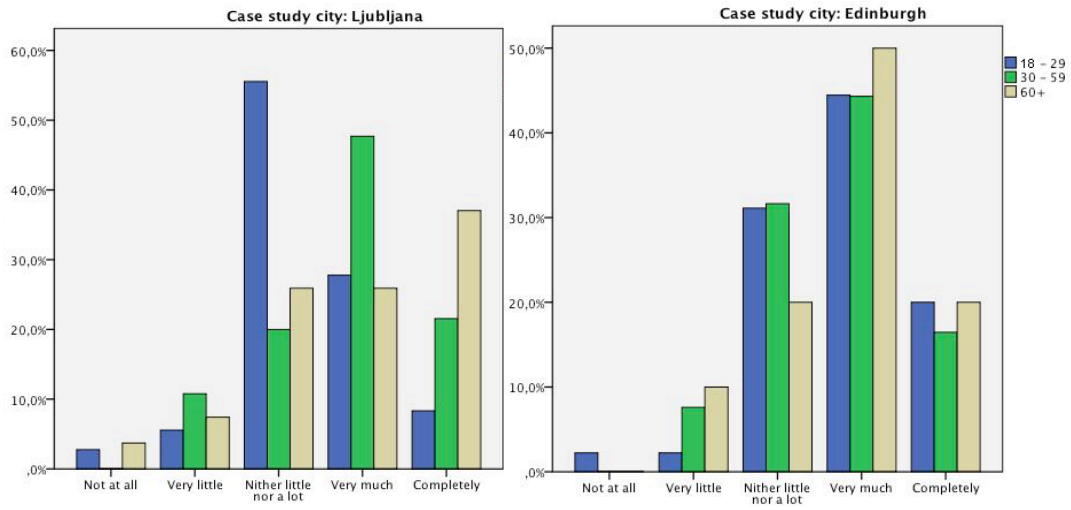


Figure 6.17: Respondents' ratings of the statement: 'This place and its surroundings are good just the way they are', for both case study cities, by the three age groups.

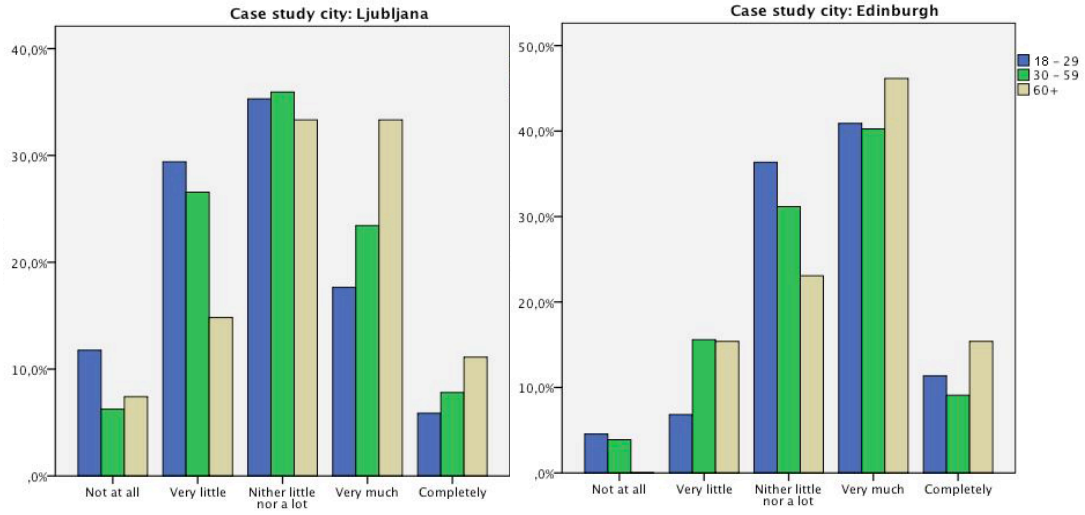


Figure 6.18: Respondents' ratings of the statement: 'There aren't any features of this place that annoy me', for both case study cities, by the three age groups.

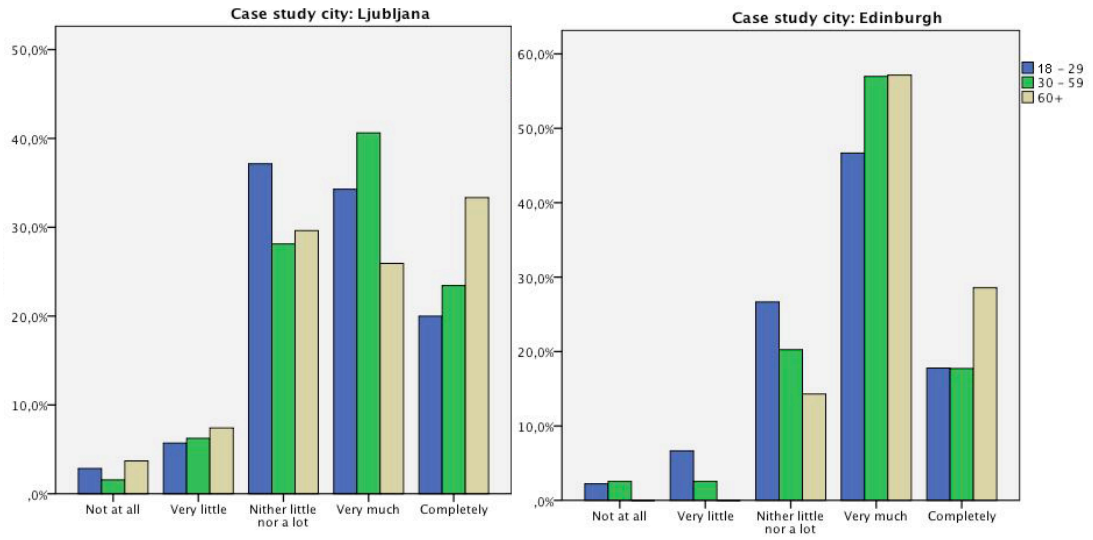


Figure 6.19: Respondents' ratings of the statement: 'I feel as if I'm able to move freely in this place', for both case study cities, by the three age groups.

Although in both cities there were some significant differences between the three age groups, in their responses to individual statements, no particular pattern could be found, in either city, which would differentiate the place components according to the age groups (see Tables G.31 and G.32 in Appendix G).

6.4 Key conclusions

The questionnaire's analysis revealed, in some detail, the characteristics of respondents' use of, and accessibility to, peri-urban green spaces. The examination of different types of green space use has shown that people used them in two ways. For daily visits and short stays, they would use green spaces in close proximity to their home, such as small and large urban parks. For longer stays, three types of green spaces were identified as being most popular for visiting: large sized, open spaces on the edge of the city (i.e. peri-urban green spaces), green corridors, and the beach (in the Edinburgh case). The activities undertaken there differed both by age groups and by case study cities. Working-age people (30-59 years old) visited these places the most of the three age groups, in both cities. They went there mainly for family outings and to play with children. The activities undertaken by younger people in Ljubljana differed from those undertaken by the same age group in Edinburgh: whilst Ljubljana's respondents would largely go there for active

recreation, in Edinburgh, younger people sought some peace and relaxation there. For similar reasons, they were used also by the older respondents. Such findings indicate the multifunctionality of semi-natural green spaces and argue for the importance of enabling a setting for people's relaxation and wellbeing, and for social and physical activities, too. In addition, even though the respondents used these spaces for different activities, in general, they all agreed on the importance of preserving the natural state of these spaces.

With regard to accessibility, the questionnaire results have elucidated a lack of good transportation links as the main constraint for Ljubljana's younger respondents when considering visiting peri-urban green spaces. This corroborates the initial assumption of this thesis that this age group is segregated since, in general, young people do not have a car (see Section 1.2). In Edinburgh, surprisingly, young people would not go to peri-urban green spaces mainly because they had no company for a visit. For them, lack of accessibility was not a primary issue for not visiting these spaces.

The analysis of sense of place components revealed that, in both cities, the working-age group and older group are most rooted in the place. The most striking difference between the two cities, however, was recorded in terms of how the respondents identified themselves with the place and how they depended on it. Whilst in Ljubljana, they clearly differentiated between the two sense of place components – place identity and place dependence, in Edinburgh, conversely, they perceived both components as an entity, which thus formed an experience as a holistic sense of place.

The analysis of the questionnaire answered some questions and raised others, and these were addressed in depth, thereafter, when the focus group interviews were undertaken (see Chapter Seven).

Chapter 7: Analysis and results of the focus groups and interviews

7.1 Focus groups

Focus groups were used to gain detailed information on the activities in which inner-city dwellers engaged in peri-urban open spaces and their preferences with regard to site features and the accessibility characteristics of these spaces.

More detailed discussion on the reasons and aims for using the focus group method, the background information and how the focus groups were conducted have been explained in Chapters Four and Five. This chapter aims to present the main research findings from the focus groups. The findings are presented as concepts, which have emerged on the basis of grounded theory analysis, in the procedure of *describing* (i.e. organising and depicting the data) and *conceptual ordering* (i.e. classifying events and objects). Finally, various data is linked and compared, in order to reach and construct an explanation on a theoretical level (Strauss and Corbin, 1998).

In general, all the questions asked when conducting the focus groups aimed to explore and explain, in-depth, the issues in Table 7.1, below, that had been raised by the questionnaire, which was implemented among city-centre dwellers prior to the focus groups being conducted. The questionnaire provided a good grounding of data on the general use of, preferences for, and accessibility to, peri-urban green spaces among inner-city dwellers. However, it also raised new questions with regard to the topic researched; these questions were additionally addressed using the focus group method.

The table below presents the objectives with regard to the research topic, which were to be achieved when conducting the focus groups (see also Section 5.1.3.2), and some additional questions, which were raised by the questionnaire results. With regard to the characteristics of participants, the criteria was to hold focus groups with younger and older inner-city dwellers only, since these two age groups were assumed to have poorer accessibility to peri-urban open spaces (see Section 3.2.6 for a detailed discussion). However, it should be noted that in Edinburgh case not all of

older group participants lived in city-centre area, due to problems in recruiting participants (see Section 4.3.1.2 for a detailed overview) which is also noted through the analysis of the focus groups.

The key research topics	Objectives when conducting the focus groups interviews	Issues to explore, on the basis of the questionnaire results
CHARACTERISATION OF PERI-URBAN AREAS	Preferences and opinions regarding the peri-urban areas	- Are large sized, open spaces on the edge of the city, and the green corridors, really the most preferred of them all? - Do they consider green spaces suitable for recreation as a part of peri-urban areas?
USE OF, AND PREFERENCE FOR, PERI-URBAN GREEN SPACES	What types of peri-urban landscapes are appealing to inner-city inhabitants and their leisure activities, and why	- A semi-natural environment seems to be the preferred environment, regardless of the age group; - Appreciation of green corridors and large sized, green open spaces on the edge of the city
	Daily/weekly/seasonal patterns of use	- The questionnaire respondents reported that they had not visited peri-urban green spaces very often, why not?
	What landscape features they like or dislike	- How important are the following features: trees, water, open fields? - Do they prefer closed (e.g. covered with forest) or open landscape?
ACCESSIBILITY OF PERI-URBAN GREEN SPACES	The distance they will travel and how they travel to the place (which means of transportation did they use); the reasons for their choice; and their opinion on the nature of routes to and from spaces	- How do the distance and frequency correlate? - Transport connections and other characteristics of accessibility did not seem to be an issue: how important is accessibility? - What are the reasons behind their choice of transport means (comfort, sustainability?)

Table 7.1: The objectives sought when conducting the focus groups.

As follows, the focus groups' findings are presented according to each topic (i.e. characterisation of, use of and preference for, and accessibility to, peri-urban green space), in a way that allows a comparison of the concepts that emerged from the two age groups and two case study cities, respectively. The participants are, when quoted, presented with a letter and a number which indicate their gender and age (e.g.: 'W56' = woman, 56 years old).

7.1.1 Characterisation of peri-urban areas

At the beginning of each session, after the participants had filled in the information sheet with their basic socio-demographic characteristics,[77] they were first asked if they could describe an area which they would consider as peri-urban.[78]

For most participants, regardless of the case study city or of the age group, the peri-urban area began where the city ended. Accordingly, from participants' description of this area, this would correspond to the border between the city's core and the urban fringe area, as defined in this thesis (see Section 3.1.2 for detailed characterisation). However, some participants associated a peri-urban area with an administrative border of the city or region. For example, for the participants from Edinburgh, the city ended with the City Bypass, and they considered the area beyond it (the area of the green belt) as being predominantly rural. For them, the bypass made a clear distinction between rural and urban space. In addition, the bypass – or a narrow strip of land along it – was for them, something they would perceive as peri-urban.

In Ljubljana, conversely, the participants were predominantly describing larger areas; a mix of different land uses, such as shopping malls, forest and fields and 'on-hold' spaces, which were to be developed in the future. Table 7.2, below, presents the main concepts of participants' spatial understandings and characterisations of city boundaries that emerged, illustrated with participants' quotations.

Which areas would you consider as being at the boundary of the city?	
LJUBLJANA	**EDINBURGH**
- the administrative/physical/morphological border	
M79: "Where the board 'End of Ljubljana' stands. There! Then you are no more in Ljubljana!" *M79: "The city boundary is for me, when I go for a walk to Leclerc, on the PST, it's a nice walk."*	*M63: "You know, where the East Lothians start."* *W21: "The bypass?"* *W73: "I consider the Maybury roundabout."*

[77] A sample is provided in Appendix D.3.

[78] The term 'peri-urban' was not used when the participants were asked to characterise peri-urban area, because the pilot-study has shown that this term is not widely known by the general public. Instead, to avoid possible misunderstanding, the question was asked about the 'area on the edge of the city' or the 'area on the boundary of the city'.

	W20: "When you pass the Heriot Watt and there is an amazing sculpture, I can't remember the name, Hermiston Gait area. I think that's it." *W78: "The old tram rail system. It stopped at Corstorphine."*
- the areas of mixed land uses and specific uses associated with peri-urban land use	
W25: "The surroundings of Rudnik. Where the industrial zone is. You've got there Jurčkova road, and a lot of greenery as well. And also some shopping centres, and still everything is relatively close. And also the access to the highway." *M28: "Hrušica and its area. Beyond it are meadows and fields. Along Litijska road the bus connection is OK. There is also a potential for future development, but, at the moment, there are forest and fields.*	*W76: "On the west is the airport."* *W21: "I think where the green belt is, I think Edinburgh has the designated green belt and you definitely feel that's the end of it."*
- specific geographic places and settlements	
W74: "I would say Vrhnika and Brezovica." *W25: "Sostro."*	*W76: "Cramond."* *M63: "Corstorphine. Possibly Riccarton?"* *M75: "Currie."*
- mental perceptions	
	M20: "I guess if I had to take a bus, that would be it. Because once you get on the bus, you could go also very far."

Table 7.2: The concepts, which have emerged from the focus groups' participants, when characterising the peri-urban areas.

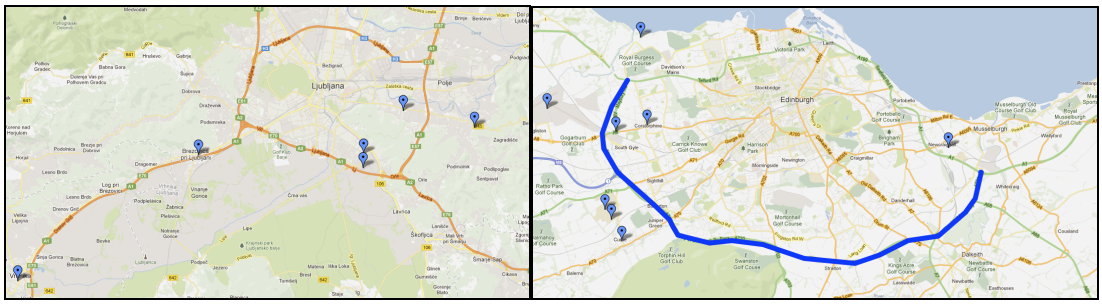


Figure 7.1: The graphical representation of the places which were mentioned by the focus group participants as being peri-urban, in Ljubljana (left) and Edinburgh (right).

7.1.2 Use of, and preference for, peri-urban green spaces

This section discusses the participants' preferred destinations, which they used for their regular and occasional activities, and specific reasons why they preferred this place, and not any other.

7.1.2.1 The green spaces that the participants chose to go to, for their activities

All participants visited green spaces close to their homes significantly more frequently than any place which, in this thesis, was considered as peri-urban.[79] Hence, guidance about conducting the focus groups demanded more effort and several sub-questions to remind the participants of other places that they had visited recently, and to bring the focal point of the conversation to the topic of peri-urban green spaces.

With regard to peri-urban green spaces in Ljubljana, the destinations that were mentioned by the participants correlated with those that ranked among the most frequently visited also in the questionnaire results. The focus groups participants, both younger and older, mentioned: Rožnik, Golovec, Grad, Šmarna gora, Ljubljana Marsh, Pot spominov in tovarištva (PST), paths along Ljubljanica river, Koseški bajer, Krim, Podpeško jezero, Orle, and Toško Čelo. In addition, some other destinations appeared to be popular with several focus group participants: Sv. Ana, Gruda, Grbina, Lubnik, Urh, and Klobuk. Nevertheless, Rožnik was the most frequently visited location by all of the participants who lived in the city centre, both younger and older.

W79: "We go here nearby – Golovec, Grad, Rožnik, but always we choose some different path."

W60: "It is a destination which is quickly accessible. There is a lot of green." [Rožnik]

[79] For a list of the main peri-urban green open spaces considered in this thesis, see question Q7 in the questionnaire (Appendix C).

All of the young participants from Edinburgh lived in the city centre, and the green spaces they visited the most often were large urban parks: the Meadows, and Princes Street Gardens were mentioned almost exclusively. More distant locations that they visited were: Blackford Hill, Portobello beach, Holyrood Park, Cramond, Water of Leith, and the Pentland Hills. The list of frequently visited places by the older group of participants, who almost all did not live in the central parts of the city (see Section 5.1.3.2 for details), was more diverse: Leith Links, Portobello, Blackford Hill, Queen's Park, Victoria Park, the Botanic Garden, Saughton Park, the Union Canal, Green Bank Park, the Braid Hills, the Pentland Hills, and Cramond. However, all of these places were located in close proximity to the individual participants' homes. Among the more distant ones, they mentioned: the Pentland Hills, Cramond, and Portobello beach.

7.1.2.2 The reasons for participants' choice of green space

The proximity of green space to participants' homes was the single most decisive factor, in both cities and in both age groups, for their choice of a green space to visit. Moreover, the focus group discussions proved clearly that the closeness of the green space would overcome the other factors that might be important when choosing the green space to visit, such as, its appearance, landscape features, or facilities. Closeness of the green space to participants' homes was important, mainly because they did not have to spend a lot of time to get there, which made it a good place to go to, on a daily basis. For example:

W78: "Aye, closeness. It is 15 minute walk. And the Queen's Park is not particularly beautiful, but it is a nice walk."

Among other reasons for visiting a specific green space, the answers were mainly associated with participants' daily obligations and activities, such as walking the dog or daily recreation. Some of the other reasons included relaxation, health reasons, and the company (see Table 7.3 for quotations). Reasons related to accessibility of the place were also mentioned but this will be discussed in the next section, 7.1.3.

Which is <u>the</u> deciding factor when you are deciding on which green space to visit?	
LJUBLJANA	**EDINBURGH**
- The closeness of the green space	
W79: "Because it is close!" *W76: "You have to go somewhere for a walk and for sure you won't go somewhere far."* *M29: "It is close to home, that is the factor, and water surface is a factor also."* [Koseški bajer] *M32: "Mostly I go to Rožnik. I need to take the dog out every day, for at least one and a half hour. So for sure if I am not bothered to go I don't know where, I mean, I get into the car and drive somewhere, but I go to Rožnik. Yes, for sure, five times a week."* *W27: "Also the time matters, right. If you are thinking to go outside of Ljubljana, then you make a trip, say, an afternoon one, and then is not anymore just a two hour outing. Personally, I like to try some new places. Especially in the group, if someone suggests something..."* *M27: "I like to go to different places, but it is true that one needs to have higher ambitions to get somewhere more far."*	*W18: "Actually, it is very close to mine.* [The Meadows] *But also I don't know any other. I don't live here very long. It is the only one I know and also it is very big, so it's the best."* *W30: "For me it is closeness to home, it is accessible by foot, there are no cars, and I know the area, because I pass it every day to go to Uni..."* *W27: "Yes, the location. It is close to university, so we usually go from the studio to play on the Meadows and then back to the studio."* *M28: "Yes, it's very close to my house."*
- Other reasons	
M79: "We go for company, of course." *W66: "So you can shut down completely and just go, without a goal, and you listen to the birds singing... that's it."* *W60: "For my health, to keep fit."* *M30: "I have a dog, so I need to go for a walk with him."* *M27: "I don't have a car so I go wherever I can get by bike or by walking."*	*W68: "It is relaxing..."* *W27: "It is just a place where I can go and just relax. And think about something else."* *M28: "Yes, it is a place to make activities and sometimes just walk and think."*

Table 7.3: The deciding factors when choosing a green space to visit.

Most of the respondents distinguished between destinations to which they go on a daily basis, from the destinations they would choose to go when they had more time. On a daily basis, as mentioned above, they chose places nearby where they could go for regular recreation, e.g. for a short walk, which they did alone or because they had to walk the dog. For this, they would usually devote one hour per day (including going there and coming back home). In addition, older participants and/or those with a dog, had a more fixed timetable:

W56: "I go regularly to Rožnik and back for one hour of recreation."

W67: "I go every day. When the time is ten, I go out, I don't care if it rains or not... Today, I will go at two, because I am now here."

W55: "My time is seven in the morning. From seven to eight. Because I have a dog."

W60: "I usually go in the afternoon."

M76: "When I go out, one day a week I take a friend out, who is blind. And that's all."

However, when respondents had no time constraints, proximity to home was no longer the most important factor when deciding which green space to visit. Then, other factors came to the surface. The factors mentioned were placed into one of four main groups, as listed below. In this order, they are presented in more detail in later sections of this chapter.

- **The type of activity** (physical activities were popular with the younger generation, whereas the older participants listed personal reasons (their capability, mood, wish to do something for their wellbeing (a place to relax, enjoy nature, do something for their health));
- **Landscape preferences:**
  - The naturalness of the place (remoteness from traffic and built-up areas);
  - The physical characteristics of the place (morphology, land use, etc.);
  - The opportunities offered by the place;
  - The preference for a specific peri-urban green space type;
  > The ideal place
- **Social contact** (in terms of both choosing a place which is popular with other people and going there in company).
- **Accessibility** (Section 7.1.3).

I. The type of activities in which people engaged

Apart from closeness to home, the type of activities possible to enjoy in a space was the most decisive factor when choosing a green space to visit. Among other factors that influenced their decision about which green space to visit, the older participants, in both cities, mainly cited personal reasons, e.g. their mood and physical capability, but also some other reasons, e.g. the season, and time they had available.

M79: "It depends on the mood."

W76: "Also depends on how capable you are. I used to love to go hiking, but now I can't go anymore, now I go on the flat surface."

W66: "We also change destinations; in the summer, we go somewhere where is not hot, in the winter, we choose to go somewhere where is more sun, to warm up a little bit."

W69: "I've got my husband so, let's say, we go for a walk, because that is what we do together, because he doesn't go to the gym. So we go for a walk to get his bit of exercise."

The younger participants were more adventurous and, for them, predominantly, physical activity was the main reason to go to a green space:

M27: "I want to do something for myself, to be fit, not just to enjoy and look around. For instance, this is important for me: that I go out and do something for myself and use this time also to relax. In general, hills are quite a challenge for me, Šmarna gora is one of them, although is has become quite populated."

W25: "It depends on the type of activity. If you go alone, for your personal recreation, you'd go quickly, alone, and somewhere close by. But, in company, you make an arrangement, e.g.: OK, let's go to Toško Čelo. So it depends on the type of activity, the purpose, right."

The general outdoor activities, in which the participants engaged, were very similar to those of the questionnaire's respondents, namely: going for a walk, to enjoy some peace, to relax, for active recreation, to enjoy nature and wildlife, etc. However, walking was the activity mentioned most often in all the focus groups. As follows, the main activities that were reported, by age group and case study city, are listed and illustrated by the participants' quotations.

In Ljubljana, a range of activities, in which the older group participants had engaged, encompassed walking, cycling, dog walking, participating in organised recreation, meeting friends, Nordic walking, gardening, and participating in various interest groups. In particular, they liked to describe some of their favourite walks:

W76: "There along Ljubljanica river, we have beautiful walks, you know. I have problems with my back, so I walk – I do three circular walks, so I walk for one hour."

W67: "I walk to Tivoli, passing Rožna dolina, above Grbina up to Gruda and back to Bokalci and then to Koseze path and back to Šiška. I can't go to the mountains, I had a heart stroke and it could cause me problems... I don't dare to go, I can't."

Among Ljubljana's young participants, walking was also the preferred activity, followed by running, hanging out, hill walking, and hiking. Not unexpectedly, the length of time and the stamina that they had was much higher than that of the older participants.

M27: "For me, the recreation starts from my home. In fact, I like to come back home tired, regardless if it takes one or two hours. Like you said, I really wouldn't like to walk for an hour to some place and back, and after that still be nervous and wouldn't be able to sit still. In that case, I didn't do what I wanted. Cool is to come back home exhausted."

W27: "Well, I usually run below Urh, occasionally, I run from Urh to Orle. On Rožnik I'd also go for running."

M27: "Often I go to sports fields to play basketball there."

Interestingly, most of Ljubljana's young participants perceived cycling as a means of transport rather than as going cycling for recreation:

M27: "Bicikelj [Ljubljana's city bike system] *could be linked with peri-urban green spaces: you come there by bike, park it there, and then you go for running. When you finish, you go back home, again, with Bicikelj."*

W26: "I use PST, which I have at my doorstep, and I like it a lot and I think it is a cool thing and it should be used. I go to PST for running or walking. But, in general, I use bike as a transport means always, also when I go outside Ljubljana, close by or far away."

In Edinburgh, among older participants, the activity they reported, almost exclusively, was walking. The other activities that they mentioned were: gardening, occasional outings with their grandchildren, and dog walking.

W74: "I spend a lot of time with my grandchildren. Walking with my grandson – we go down to the beach a lot – when he has his time off. And I've been walking with my granddaughter who has a wee dog. Swimming... and I do a lot of walking."

W76: "I do gardening. At the church. Walking. I walk at least once a week just to check the streets once were there are still there. [Laughs]

Also Edinburgh's younger participants' preferred activity was walking. However, in comparison with the younger participants from Ljubljana, they went for walks more often to enjoy some peace and to relax than for active recreation. This finding corroborates the questionnaire results, which showed that younger people in

Ljubljana prefer to go to green spaces for active recreation and those from Edinburgh, to enjoy some relaxation.

Other activities, reported by Edinburgh's younger participants, were cycling, hiking, running, and playing sports games:

M21: "I walk, I cycle, I try to discover new parks. Hiking, usually just outside the city. As for the beach, I go to North Berwick and further along there as well."

W21: "Yes, I am pretty much the same. I like to go out and explore places. I would like to go further out, but I've never been to places like the Gallery of Modern Art or Stockbridge, I just don't have the time. I also like just sitting in the Meadows and enjoying the nice day, relaxing when there is sunshine."

W23: "I am mostly cycling. It is really good because you get to explore the places that you wouldn't normally go in the city. And running. So lots of cycling and running. When is a nice day, I go to South Queensferry and places like that."

W18: "In terms of outdoor stuff, occasionally, when it's nice weather, I go to the Meadows. But I don't really know any other places to go, so we occasionally go and play football at the Meadows."

II. Landscape preferences

Landscape features which were mentioned by participants were grouped into those related to the general appearance of the place; its physical characteristics; and the opportunities that the place had to offer.

Without exception, the participants valued more highly the places that were natural in their appearance, although they preferred the ones that were well managed (in terms of providing bins, information boards and good paths to and through the area). A visit to peri-urban green spaces presented them with an escape 'into green' where they could detach themselves from their daily tasks. However, with regard to more

specific preferences for landscape features, there were differences between the two cities' respondents.

In Ljubljana, both young and older participants mostly referred to the hills as their preferred places to visit, although they rarely mentioned the views as the characteristic of the place which would present an incentive for the visit. Rather, they had chosen hills because they offered them the opportunity for good recreation and there was a restaurant or a café on the top, where they could get some refreshment as a reward for their effort. Furthermore, in Ljubljana many participants often went to the countryside to gather food from the wild, which appeared to be another cultural difference since in Edinburgh this activity was hardly reported.

In Edinburgh, however, both age groups repeatedly referenced the views as the green space's feature they greatly appreciated. Water features were valued highly also: walking by the water (river or lake) was the activity most commonly undertaken.

Which landscape features did the interviewees like?	
LJUBLJANA	**EDINBURGH**
THE GENERAL APPEARANCE OF THE PLACE	
M79: "We observe nature." *W79: "Natural, natural. If it only is possible, of course. What can we do; we were visiting the city parks when we had small kids to go to the playgrounds, now we want as less concrete as possible. Well, also Tivoli is managed great, luckily."* *W27: "For me it is also important to get away from the noise, complete disconnection... air, nature, oxygen and so. Well, of course, I would rather go somewhere where it is completely peaceful, so I can really disconnect, but this takes time and also, it is an expense to go somewhere more far."*	*W75: "Green is easy on the eye."* *W66: "Just to be outside!"*
THE PHYSICAL CHARACTERISTICS OF THE PLACE	
- terrain	
W67: "And a surface, it is not asphalt." *W60: "Also, but for me, the motivation is when there is something on the top. Say, you go to Golovec, but you don't really know where you are going, there is nothing there. But Rožnik... there is a point, you can go there, meet someone and so."*	*W67: "I go down to Seafield and Portobello, because it is flat all the way."*

M29: "Golovec is good because it is flat on the top so you can run there." *W30: "I really like Rožnik, for instance. Because for me, it is important that it is close, because of the time, right, so you can manage all your stuff. And Rožnik is very nice, because it is green and with a little slope, it is not completely flat, right..."* *M27: "Also the height. To go on a hill, I mean."* *M27: "I like ascents, they represent a challenge to me. Šmarna gora, for example, is like that, though it is getting too populated."*	
- remoteness	
W25: "Remoteness from the traffic." *W28: "Yes, that there is no built-up structures."* *M27: "For me, it is important that it is outside the city, so I don't see those houses, and streets, and asphalt, which I look at every day."*	
- trees, greenery	
W60: "I look at the pine trees!" [Laughs]	*W66: "Trees. I love trees in this time of the year. The colours!"*
- water	
M29: "Well, I would like, sometime in my life, to swim in the Ljubljanica river and in Koseški pond."	*W67: 'I like the beach."* *W66: "I like walking by water. It's nice in Musselburgh when you walk up the Esk, and I just end up following the river, I'd just like to see what is around the next beach."* *W66: "I like Cramond, the walk along the Cramond. Up the river. I go up the river and then I come back and I walk right along to Seafield. Cause it's near the sea."* *W66:* [Blackford Pond] *"It has a pond and rocks... I walk there. It is wild, it is kind of wild."*
THE OPPORTUNITIES THAT IT HAD TO OFFER	
- views	
W81: "My husband always wants to go to the mountains, to look from their tops."	*W72: "But if you stand up anywhere and look over Edinburgh, it's wonderful!"* *W69: "Because once you get to that Hunter's bog, you could be in the north of Scotland, you can't see anyone!* *> When you walk around the pond, you get to Portobello at the end of the pond, and you look back and you get a straight view right back to Arthur's Seat. I mean if it's not raining* [laughs], *you can see Arthur's Seat!"* *M20: "Edinburgh has got this amazing sky that it just seems so huge, I mean shifting. Just get somewhere up and see a 360-degree panorama..."*

	M21: "I, for example, am always looking for views. Almost primarily, I am always looking to see a nice view. I don't know why, maybe because..." *M20: "Edinburgh is such a shielded city that you feel you want to go away from these daft buildings and go up."* *W22: "I like openness. I feel like here is so dense, so compact, you don't feel the freedom, there are too many barriers. So I like being up high or being in the Meadows... Even the Meadows feels a bit claustrophobic so I think sometimes just getting up, up... Free movement."* [Laughs]
- wildlife	
W75: "For mushrooms, if you can find it." *W55: "So you can see some deer somewhere!"* *W67: "And you can find berries when they are ripe."* *M27: "Where you can hear the birds sing."*	*M63: "But I think what I would miss with green spaces would be the wild life. Edinburgh is quite rich with wildlife."*

Table 7.4: The participants' preferred landscape features.

III. (Peri-)urban green space-type preferences

Participants in all the focus groups were asked to describe their ideal green space. The main reason for asking this question was to find out their preferences for that ideal green space, and to see how these preferences compare with the choice of green space they visited in their real life. Their preferred peri-urban green space types were recognised on the basis of their answers and on some other opinions gathered from them throughout the session.

Surprisingly, for both the participants from Ljubljana and Edinburgh, two green space types particularly stood out: green corridors and semi-natural areas. This fact indicates that even if the green space they visited most often, on a daily basis, was, for example, their local park, it was not the one that they would prefer to go to, in ideal conditions.

Green corridors were mentioned by the participants for several reasons. First, they represented a preferred green space type in itself. That means, the participants considered green corridors to be appropriate for walking and cycling, which were

activities practised most often by both age groups, in both cities. Second, they were important as a part of the way *to* the place, either to a green space or to some other destination.

The third recurrent place/green space type differed between Ljubljana and Edinburgh respondents. In Ljubljana, this was the participants' second home. However, this was significant only for the older participants from Ljubljana. This place, usually located in the countryside, for them, it represented their escape into nature. In Edinburgh, several participants mentioned the beach as the green space where they liked to go.

Finally, some of the participants gave more general answers, referencing any place in the world as being nice. Some other participants referenced larger areas, e.g. parts of the city or their ideal city, in answer to this question. Table 7.5, below, summarises these findings with the participants' own quotations.

Which types of peri-urban landscape were appealing to the focus group participants?	
LJUBLJANA	**EDINBURGH**
Green corridors	
M79: "Along Ljubljanica river we have beautiful walks, you know." *M28: "For example, I cycle 13km to get to my work place, and often I prefer to chose to cycle on PST, because I really prefer to cycle under the rows of trees than on the Litijska road, which is full of cars."* *M27: "I think that it is a good thing that we have PST. Because, if we hadn't have it, we'd only have Tivoli and Rožnik and a green bit in the city centre, and then nothing else before reaching the edge of the city. I think it is cool that we have something in-between."* *W69: "I have Kamniška path close to my home, I walk there twice a week towards Ježica."* *W60: "I am often drawn to walk along the rail road. When I am on the train, I am thinking: This or that path would be a nice place to walk."* *W74: "Once, I'd like to go along the whole PST. With a bike. But I don't even know, how long it is, I've never tried to bike there..."*	*M28: "My favourite place is Water of Leith walk. It's a river, it's really nice."* *W66: "Between the Union Canal and the Water of Leith there is another walkway, made from the old railway line. Although it's not… Would you classify it as a green area? I mean, it's covered with trees and…"* *W80: "When we had visitors, we took them from Roseburn along all the Water of Leith. I don't know if that's a green space, but we used that. And we walked up to the Modern Art Gallery. And I think that walk, I mean, if you walk all the way down to Leith, that's a lovely walk."* *W66: "But just down from the Gyle there is Cramond. You can walk through, along the river. There is green… it's right through the Cramond village you can walk."* *W66: "I like the Cramond, walk along the Cramond. Up the river. I go up the river and then I come back and I walk right along to Seafield. Cause it's near the sea."* *W66: "Because it has this beautiful walkway where you can walk through to Portobello."*

	W21: "I really like the cycle paths in Edinburgh in general, just to travel around and sort of find any new places because they all seem to branch of. There are some places that are completely removed bike paths; there is one along the coast towards the Forth Road Bridge; it is right in the city, but it feels like you are already outside of it so quickly, because it is surrounded by trees, but the city is right above you, and so, I really like that one, is a nice cycle escape route, because you are so quickly removed." *W66: "A green corridor, yeah! We can walk right through Edinburgh. And the other thing they have in Edinburgh, are bicycle tracks through the city. With greenery all around as well."* *W66: "Along the river, we walked in Peebles, that's a nice walk."* *Vita: "So would you say it is more important for you that when you walk you have a nice path to there, more than just getting to the space and spending time there?" W72, W74: "Aye, aye."*
Semi-natural areas	
W27: "For me, it is also important to get away from the noise, complete disconnection... air, nature, oxygen and so." *W25: "Mountains, hills..."* *M27: "For me, is important to be outside the city. So I don't see those houses and streets and concrete that I see every day. Something like Tivoli, it is not for me, because I know that I am still so close to the city that, wherever I will go, I will come again to some houses. But if I go somewhere out of the city, I may get to some hamlet now and then, but it is not as bad."*	*W66: "And the Gardens. I walk through the gardens on Princes Street. Along the canal and then along the Gardens. If there is a chance, I prefer to go through the green."* *M20: "I would really like to go around more... Well, but ideal place for me, maybe places without buildings. Or a really nice forest on the beach where you have sand and sea birds, that is more like a dream."* *W19: "Yeah, places with lots of plants and water, because those are places where animals are living, where you can have diversity of nature. It is just really beautiful."* *W22: "The best would be if there was a little of woodland, a little bit mountains and there would be obviously grass there, that would be cycling routes there. So that there would be lots of different things so that everyone could engage with whatever they go to the park for. So also kids' play area but also places that are less kept, in a way, more nature-like areas."* *W27: "Yes, maybe a place with a woodland area, with a lake or some water at least. Grass. People, but not crowded. Blue sky, that's important.* [Laughs] *Maybe some facilities for barbecue or that kind of thing."* *M28: "Yes, lots of woods, a river or some lake and that you can kind of get lost, that you can't see houses around. So more natural."* *W21: "I've not explored as much as everybody else.* [Laughs] *I really want to go to this Blackford Hill, it sounds really amazing. As far as going to*

	green spaces, I just go home and go there to a green bit, because I am so close, I can go to the forest. But the place I frequent the most, that I feel like a total escape, is the Arthur Seat. Even just walking around it, there is like a path to Niddrie, a tunnel, and it is really exciting when you cross that." *M28: "I would prefer more natural."*
Second home	*The beach*
W67: "I have a second home a little bit more far from here, but there is intact nature. There are deer, wild pigs, all of them they come to visit me. I am a bit away from the village, my first neighbours are 350m away, so really... something for my soul." *W76: "For me the ideal place is Katarina. On the little hilltop, where I have a little house and a garden. And I am picking blueberries there, and mushrooms, and I go to Jakob and to Grmada... There is nothing more beautiful in the world. Amazing walks are there! And it is not far from Ljubljana!"* *W60: "I have my homestead on Kolpa, I was born there, I have a field there, and I go there often. I listen to birds... paradise on earth. You come out of the house and they sing 'hello': ku-ku!"*	*W66: "I like the beach."* *W69: "I like walking by water. It's nice in Musselburgh when you walk up the Esk, and I just end up following the river, I'd just like to see what is around the next beach."* *W74: "Other place is the beach. Portobello."* *W22: "Outside of Edinburgh probably woodland, forest, yes. The beach, I think the beach is ok."*
Ideal place to live	
M27: "In my ideal city there is no shopping malls on the edge of the town, but, instead, small shops scattered around the city."	

Table 7.5: The participants' preferred green space types.

IV. Social contact

Having social contact, in terms of both meeting or just seeing new people there and going to a green space in company, was very important for both age groups in Edinburgh. Older participants liked to go to green spaces which were visited by other people for safety reasons: they were afraid of being physically attacked and unable to protect themselves, and because, in more remote places, they could fall and hurt themselves. Younger participants, too, preferred to go in company. Moreover, if there was no interest among their friends to visit a green space, they would not go on their own.

In Ljubljana, both age groups were more willing to go to green space alone. Older participants said that they would prefer to go with some friends or a family member,

but if no one had time, they would also go alone. Younger participants would predominantly visit a place to get some quiet moments for solitary recreation. However, they too would go to a park or some more managed green space, to have a picnic there or to meet friends.

The findings from the focus groups support the questionnaire results, on the question of visiting green space in company or alone, in both case study cities. Whilst the questionnaire showed that the highest percentage of respondents in Ljubljana went to a green space alone and, in Edinburgh, in company, the focus group discussions teased out the reasons and preferences behind these choices. In addition, parallels between both methods can be drawn on the preference for social contact in green space. In the questionnaire, the respondents had to rank how much they agreed with the statement: 'I like this place because there are friendly people around.' In both cities, the majority of the respondents ranked 'Neither agree nor disagree' the highest, and second highest, 'Very much', which could be interpreted as either the respondents did not really care about other people being present or, alternatively, they were happy seeing other people around. The focus groups' findings support this, since older participants, especially, liked to see other people present, predominantly for safety reasons. Younger people cared less about this. They did, however, prefer to have company, when visiting.

Preferences for visiting green space: alone or in company.	
LJUBLJANA	**EDINBURGH**
Alone:	
W27: "The feeling is completely different if there are many people around or if you are alone." *W27: "I went to Grmada this Sunday and there was no one there. I didn't meet even a single person. Then I arrived to Šmarna gora and it was like a most touristy place."* *W67: "And alone. I go also alone! If I go alone, I come home half an hour earlier. You don't chat, just go." – W86: "But it is more lonely." – W67: "Not for me. I simply shut down everyone and just go."*	*W66: "I sometimes walk alone. But it is not the same. I like to walk with somebody if I can."* *W66: "And I am perfectly happy on my own. And I always meet somebody I know. Cause they all live locally as well. So, you know, and that's fine. But that's different, isn't it? Just being in the neighbourhood, falling out the back door for a walk."*
In a company:	
	W74: "Walking with my grandson – we go down to

	the beach a lot – when he has his time off. And I've been walking with my granddaughter who has a wee dog." *W27: "I would like to explore more places, but I don't like to go alone. So if I don't get someone else to come with me, I just don't go to other places."* *W66: "But I wouldn't plan a walk out of the town ever, on my own. Ever. It would always be with a friend or a walking group."*
The appreciation of seeing friendly people around:	
	W66: "And the other thing that is nice when walking outside, on special walk, not just walking on the street to get to somewhere, but on these special walks, everybody speaks, everybody says hello! Everybody acknowledges you, and that's one thing that I like. Not just looking at the bushes and stuff, but people speak to you." *W66: "I like it when it is a nice day, people are out walking and sitting, relaxing and taking, you know, the opportunity to do that. Gardens, for instance, the Meadows, are full in the summer!"* *W69: "Also the students, for instance, and there is a cricket match, barbecuing, all kinds of things. People do use what they have. You know, there is always gonna be a few people that go: you know, well, it's such an effort to go to, but really, it isn't."*

Table 7.6: Visiting a green space alone or in company.

7.1.2.3 Satisfaction with the management of peri-urban green spaces

Interestingly, none of the focus groups' participants mentioned management of the place as being a particularly important factor when they were choosing a green space to visit, although they preferred when the places were reasonably managed, as some of their answers have shown (see previous section for the details). When they were asked more specific questions about this topic, two reasons for not mentioning any management issues came to light.

First was their general resignation and acceptance of the current situation, which was the case of Ljubljana's participants, especially the older group:

M79: "I reported this to the council many times, you know. But it is like a voice crying in the wilderness." [About the dissatisfaction with the paths and train connections to their preferred green spaces]

W60: "We are not so demanding."

W68: "What can we do, we are just satisfied with the situation as it is." [Laugh]

W86: "We just need to adapt, right."

The second reason was their general dissatisfaction with the current management of green spaces, especially with regard to facilities and paths to, and on, the site. This was reported mostly by the younger participants in Ljubljana. They, in general, perceived the city authorities as institutions that do not take into account the opinions and needs of the city's inhabitants.

W26: "I think there should be a water fountain. More of them. But this is of no interest to anyone, right, because it doesn't bring any profit."

M28: "Also, the management itself is very important. For example: there is a difference if the bike path is smooth or if it is full of tree roots growing under it. And the roundabouts! They are not kept in a good state. And, if you write to the authorities, they say that they have lack of funds, for the maintenance, for the next two years."

M27: "Nothing can be done! It's impossible!"

M27: "Yes, the city administration is very non-cooperative, they won't listen to you. They just defend themselves. If you suggest something to them, they set themselves immediately in some sort of a defensive position."

M27: "Well, OK, not everything is that bad, now we are dramatising the situation a bit. But, as I said, I really miss a little more attention from authorities. A positive answer, like: 'Yes, we can do this.' Or at least: 'We'll look into it.'"

In Edinburgh, both age groups were generally more satisfied with the management of green spaces. They thought that Edinburgh had good green space provision, with spaces which are readily accessible and well managed. They also noticed some improvements which had been made recently to some of the green spaces. However, they missed having more information on the specific green spaces' locations, as well as information boards on site.

W69: "I would say you are in a walking distance to greenery from wherever you are."

M28: "Yes, they are very well kept, clean and safe."

W18: "For a city it is quite good. It could definitely have more, but I don't feel that there is a lack of green spaces."

M28: "Yes, I think Edinburgh is ok."

W66: "I live in an area near a green park called Leith Links, and they created a new walkway there, which I was quite amazed because I didn't even know they've done this. There used to be a little path and was a bit unpleasant to walk alone, and very overgrown, but now it is tarmac, made a big path with street lights."

Table 7.7 summarises participants' satisfaction with all the management and maintenance issues mentioned, i.e. their general satisfaction with the provision of green space, facilities, information boards, parking, paths on the site (paths to the site are discussed in more detailed in the next section), and cleanness.

How satisfied were they with the management of peri-urban green space?	
LJUBLJANA	**EDINBURGH**
General satisfaction with green space provision:	
W60: "We have quite enough of green spaces here in Ljubljana." *W69: "Here in the centre we don't. Perhaps for the elderly, but not for the kids."*	*W66: "So that shows you we are really lucky..."* *W72: "I don't use them, but when I am on the bus and I look at them and I think how lovely they are. Like I walk on the right side of Princes Street and*

M27: "I think Ljubljana doesn't know exactly what to do with its green spaces."	*see the gardens. And the bus on the Meadows, walking there is lovely. And I think the greenery around there is lovely."*
Facilities:	
W76: "Just on Orle – if you are walking there for two hours, would be nice to have a tea there, but they closed the restaurant there..." *W60: "And the restaurant on the top, so you have a goal."* *W69: "Perhaps a bench..."* *W60: "Children playgrounds... We have no place where we could take our grandchildren to play."* *W25: "PST could have a water fountain."* *W81: "I think if there was no restaurant on the top, many people would not go at all!"*	*W76: "But one of the stipulations was that always had to have a coffee shop at the end."* *W20: "I think bins are quite important. That is the only thing. Like on the Meadows, there is no glass recycling, and that pisses me off. Because all the people that drink in the Meadows, I think if there was a facility to recycle glass, they would, but..."* *AW66: "Because I think that's another thing, when you get older, the comfort stop. And really, at my age, I don't want to be hiding behind the bush, you know."* [Laughs] *W78: "The path is well used but there is no buckets. No buckets."*
Information boards:	
W30: "It is true, there are many paths. There are many crossings and then you question yourself: where to go now? But there are also markings, right." [Rožnik]	*W66: "I was thinking, if you go to France, for example, and you do walks by a river or whatever, you often get really good maps that actually relate to what you are walking. I remember, like at poplar tree, turn right... You know, this sort of thing."* *W66: "But you could have maps stated where they are. You know, where is the wee inn and that sort of thing. When you go out, you go off, and you have no idea. And then suddenly, you may find a wee inn and you think: Oh that's great, how sweet!"* *W69: "It would be so nice, actually, in the areas that people walk, that there would be a leaflet which would sort of said, where are these places."* *W22: "Well, I think for me, because I didn't know all these areas – how close and how cool they are – maybe I am just a bit shit not knowing that they were there, but I feel like people don't want you to know, like, Edinburgh City Council, they don't show you that there is great extensive nature just at your doorstep, I think they don't communicate that enough.* […] *Like bike paths and things... I feel like you shouldn't go out of your way to get this information. It should kind of..."* *M20: "It is nice when there is a little wild life information."*
Parking:	
W27: "It is very difficult to park a car there now, because you need to pay for parking everywhere." [Šmarna gora]	
Paths on the site:	
W30: "The bike path there is bad." [Šmarna gora]	

M27: "On the maps there are sometimes marked some kind of forest roads, but then you end up with your bike in the middle of the forest, with roots and everything, and if you don't have a good bike, it is pretty bad. But it is nobody's fault, because you wanted to go there yourself. Anyway, I am not practising some kind of extremism, just don't like always the same paths." *W60: "It is a nice walk. Even more now, because it has become accessible."* [Špica] *W27: "They did a great renovation of the Castle, I like it. Also its surroundings, the walking paths… great! The access is great; in addition, you have a bit more steep Študentska path and then the hill..."*	
Cleanness:	
W27: "You can't even put a blanket on the grass because there is dog poop everywhere."	*W78: "There is a lack of people to clean up pathways where the rubbish has been thrown."* *M78: "It's horrible thing to say but in Blackford and Braids, is the number of people who actually take the dogs out and pick their doggy-do up, put them in a plastic bag and they just basically... We found that in the trees there were hanging bags with poo up there."* *W30: "One of the things I was really surprised when I went to the Cramond island during the summer, was the amount of debris and crap and... It was unbelievable, the amount of rubbish. Badly surprised about that."* *M20: "People have parties there and then they just leave there their rubbish."* *W30: "But I think the Council can't do anything about that. I don't know. I think something that is clean. I mean I don't mind nature's dirt as such, you know, leaves and debris as such, it doesn't really bother me, but if you see stuff that doesn't belong in the bushes..."*
General appreciation of a place and improvements noticed	
W25: "I really like Murgle, for example, because the trees are higher than the houses." *W76: "Koseze pond is tidied up, civic spaces have been improved… I mean, you can't really complain... Perhaps something like Bežigrad is less..."* *W27: "I really love how they improved the city centre and the banks of Ljubljanica river, and all the bridges, it is so fluid and accessible now."* *W25: "I was really surprised when I biked down the Toško Čelo and I saw that the road was closed and on the board was written: 'Trespassing at your own risk', because they were building a public path through the woods, so,*	*W69: "An area of the Lochend Park was not good, you know, it was very overgrown and the water was flooding, it was not nice. And there was quite a lot of drug dealers and it was not a comfortable place to go. And I would never go but once I went because I wanted to see a herring, because I knew that there was a herring in there, and I realised that they were gradually trying to do something about it. And now they have... Lochend Park feels quite safe now."* *W72: "But at Inverleith Park, I was there a long time ago, we were doing a walk along the Water of Leith and we would cut through the park and the Botanics. And you know that pondery, there was no greenery around it, now, I haven't been back, but somebody told me that they've done a*

obviously, they will do something there. I haven't looked at it specifically yet, but I was thinking: yay, great! Elsewhere the paths are closing, right, they just won't allow the pedestrians and cyclists to pass through, whereas here they will make one: cut the trees, draw markings... I hope they won't pave it." [Laugh] *W76: "Prule is nice now since the area has been improved!"*	*lot of work in Inverleith Park. They seem to be trying to bring them all up."* *W69: "I think there is a real desire to make places green. I think about Inverleith Park: that it's so freakin flat, isn't it? I think it's difficult to make it terribly interesting, but it is all the sport facilities. And that goes on for miles. And everybody gets to use sport facilities, it's unbelievable."*

Table 7.7: Participants' opinions of the management of peri-urban green open spaces.

7.1.2.4 Constraints that prevent people visiting peri-urban space

The reasons for not visiting peri-urban green spaces were considerably different for Ljubljana and Edinburgh participants. In Ljubljana, the main reason cited was the lack of accessibility, especially among those who were dependent on public, or other means of transport, apart from the car. In Edinburgh, (lack of) safety was a reason often mentioned by older female participants, whilst the younger participants claimed their constraint was the lack of information about green spaces that was available to them. Also not having company to go there with inhibited some Edinburgh participants.

In addition, the participants were asked about their frequency of visits to some of the specific peri-urban areas of the city which are regarded as not particularly nice and popular green places to visit. The purpose of asking this question was to get participants' perceptions and opinions of those places. The answers were mostly negative: those spaces were simply not appealing to them. No other reason was reported.

In line with the previous question, participants were asked if they could think of any open area which they would consider as neglected or deprived. In Ljubljana, the areas that were mentioned were mostly less affluent parts of the city, some of the construction sites in the city, and some peri-urban areas where landfill sites, recycling centres and larger industry were located. The latter were mostly those on the south side of the city, near to the city's main landfill site. This area was also most

affected by a sprawling development and the illegal construction of private houses. At present, this area is well known for the numerous shopping malls that have been built there in the past two decades.

In Edinburgh, neglected areas were associated with the western parts of the city, in the surroundings of the bypass: mainly housing areas and less defined, 'on-hold', open areas.

What were the constraints that inhibited people from visiting green spaces?	
LJUBLJANA	**EDINBURGH**
Not appealing (generally neglected or badly perceived areas)	
W56: "Bizovik is one of those neglected areas." *M27: "I'd tidy op the marsh part of Ljubljana, it is something that disturbs me there. I don't know why, but that part seems dirty to me." - M32: "Maybe because it is a landfill site there?" - M27: "Well, yes..."* *M29: "I don't like that they built the stadium in Stožice, because I used to go there for running and now I can't do it anymore. But what can I do, there is nothing that can be done now."* *M27: "They should do something with Moste. With Ljubljanica* [river] *there..."* *M27: "Perhaps the southern parts of Ljubljana look a bit feeble. They don't have their own identity. All the sprawled development there, the houses of all sorts of colours and shapes... That southern part towards the marsh is like that..."* *M28: "The apartment buildings, say in Fužine or in Nove Jarše, they used to have bowling greens for the retired people there. I know that all these spaces are neglected now..."* *M27: "I really miss seeing younger folks on the sports fields. Mostly, there is my generation, but no younger ones."* *W60: "For example this area here across the road, between Kersnikova and Slovenska, behind the Kozolec." - M70: "What is there?" - W60: "A pit is there!" - M70: "Well, so what, it is simply an investment!"* *W60: "What about Cesta dveh cesarjev?"* *W81: "Perhaps something like Rakova Jelša..."* *W60: "For instance, I am really disturbed by that huge pit in Vižmarje. There, before you enter*	*W66: "I mean, I can't think of anywhere I walk in West Lothian apart from Linlithgow."* *W67: "If you are going towards the airport, there is not an awful lot of green..."* *W66: "The west, when you come out to go to Glasgow, it's not a lot of attractive areas. Linlithgow is lovely, but just at the edge of Edinburgh... You are coming sort of towards Livingston and Bathgate and..."* *W66: "And Ratho. And there is an actual section of the canal which is quite right to say that, that should be nice for the Wester Hailes, but it isn't. That's the grotty bit of the canal." - W72: "Ratho?" - W66: Not the Ratho. I mean the Wester Hailes. It's open, but it's grotty, isn't it?"* *M20: "But if you go up the Wester Hailes near Baberton, there's nothing there. Cause they built that big housing estate there and there is nothing there."* *W69: "Actually, Wester Hailes is the size of a small town and they have no facilities at all, nothing. As far as green spaces, they don't have anything."* *M20: "And if you cycle along the canal..." - M21: "Yes, there is some bad housing there." - Vita: "Do you mean Wester Hailes?" - M21: "I guess it is Wester Hailes. The blocks are all grey and blue and really..."* *M20: "Edinburgh is I suppose, one of those cities where the poverty gets stronger the further you go out, it is so clear when you cycle down by the canal, because it starts just so beautiful and then it just gets less happy, and the clouds are coming in..."*

Ljubljana, near to the Jelen restaurant, on the right, where the sandpit is... I am really disturbed by that." *W60: "We forgot about the swimming pools! Kolezija, Ilirija, they are in a state that God help us!"*	
Safety	
W30: "Just at night is a little bit tedious. I never go for walks to Rožnik at dusk, it is a bit... Even if it is close to the city. I mean, if I am alone, I am scared, if there is someone with me, it's ok."	*W66: "I live in place called Hermitage, which is a lovely walk, but I wouldn't do it on my own, no. Because I could get mugged."* *W69: "And I wouldn't walk somewhere where I am out of sight of someone, on my own. At my age... I can be afraid of anybody."* *W69: "I don't think we consider them as dangerous, it's just the thing that we are all aware of... is not that there is anything wrong with the way you are walking, it's just make it... in this climate... I think anywhere would be a wee bit..."* *W69: "And that's near where I live, but at night I don't like to go off the broad way and walk up the highway thing. And it's not long and nobody has ever been attacked, but, in the dark, coming up on my own, I am just worried!"* *W22: "I don't like that the Meadows is quite unsafe in some bits."*
Other use(r)s of the space	
W60: "Yes, especially here, in the centre, you have to watch out, when you are cycling, because the pedestrians often walk on the bike path." - W68: "Or, the cyclists bike on the sidewalk."	*W69: "Things can get furious with bikes... I mean, we were walking along the canal and the bike just came behind and then they just go around you. They don't even have a bell!"* *W73: "What I don't like with the Water of Leith is that the cyclists use it as well as the walkers."* *M63: "That's one of the biggest problems in Edinburgh. Full stop. In terms of walking along pavements. Is cyclists on pavements. And older generation."*

Table 7.8: The constraints participants cited for not using peri-urban green spaces.

7.1.3 Accessibility of peri-urban green spaces

The focus of this topic was, first, to explore participants' environmental habits and attitudes to, and the reasons behind, their transport choices as means to get to peri-urban green spaces, second, their satisfaction with, and opinions of, the existing transportation infrastructure and connections, and, finally, when and how (if at all) they would be willing to change their travel habits in order to achieve general sustainability aims.

7.1.3.1 Modal choices – habits and attitudes

In a short questionnaire, which was distributed at the beginning of each session, the participants had to tick all the means of transport that were available to them. Their answers matched the questionnaire results: younger people in Ljubljana used a bicycle or they walked, and some of them had their own car or the possibility of borrowing one. The older participants from Ljubljana mainly used a bus, a bicycle or they walked. In Edinburgh, almost none of the younger participants had a car available to them. They walked or used a bicycle, although to a lesser extent than the younger participants from Ljubljana. None of the older participants from Edinburgh used a bike and few of them had a car. They walked or used a free bus pass, which is available to citizens aged 60 and above from the City of Edinburgh Council.

Interestingly, older participants from Ljubljana, who did not own a car, did not feel they experienced a lack of accessibility when they wanted to go to a place which was not accessible by public transport. Instead, they used a different means to get there (e.g. a taxi) or they decided to visit some other places, either the ones that were accessible by public transport or those that were close enough to walk or cycle to get there. Alternatively, they would also take part in organised trips, where a private bus was hired for a whole group. The participants who owned a car would predominantly use it to get to their second home, but never to drive around the city centre.

M79: "I go everywhere by foot." – W79: "Me too. I walk everywhere."

W76: "Some of us, we combine walking and cycling, the others, they walk everywhere."

M79: "We travel to Rožnik like this: first we bike to Čad and then we walk up the hill. To Golovec, we travel first by bus, then we walk."

W79: "To Orle, we walk from Castle passing Golovec" – M79: "Passing observatories, and then there is a marked hiking trail, with hiking signs, and Pot spominov goes through Golovec."– W76: "It takes two hours from the foothill."

Among the younger participants from Ljubljana, walking and cycling were also the preferred means of transport, especially in moving around the city. Many of them also used a bicycle thanks to a public bicycle rental scheme (Bicikelj), which was introduced in Ljubljana in 2011. However, those who had a car available to them would use it to get to more distant locations, for longer trips or, especially, if they were going in company. They felt that the car gives them freedom and comfort, which was not possible if they had to use buses or a bicycle.

M27: "I don't have a car, so for me is accessible where I can get with my bike, and that is, for instance, Marsh."

M32: "I like Bicikelj. Just, it is not spread enough, it should be until the bypass."

W27: "Since I have a car, I go with it. Actually, almost always I use a car. Also before having my own one, I had borrowed one if I wanted to go somewhere."

In Edinburgh, the conversation mostly pertained to the use of buses and bicycles since very few participants had or used a car. The older participants used buses regularly and they also knew which green spaces are accessible by specific buses. Younger participants used buses only occasionally, however, some of them also listed using a train as a means that they sometimes used to get to green spaces outside the city.

The reasons for choosing a specific transport means, as reported by the participants, were grouped into those concerned with (Næss, 2010):

- comfort;
- the process of moving;
- limitation of physical efforts;
- safety;
- physical exercise;
- habits;
- preference for a particular mode;
- relaxation and enjoyment of the surrounding environment.

Using a specific means of transport for reasons of safety was not mentioned in any group, although the participants from both cities referred to feeling unsafe when they were cycling on roads. Furthermore, using a means of transport to demonstrate personal wealth and status was never mentioned, however, this is to be expected, since people normally would not give this reason in public. Only in one session, with the older participants from Ljubljana, was the general preference for using a car, mentioned:

W70: "This is another problem: today it is almost embarrassing to take a bus or a train. 'You will go by bus! You poor thing!' People's minds, right..."

Table 7.9, below, summarises participants' preferences for using a specific means of transport, for various reasons.

What were the main reasons for their choice of transport?	
LJUBLJANA	**EDINBURGH**
- Comfort	
M29: "And then I drive to Podpeško lake, for instance." [On a topic of choosing means of transport for going to more far away places, for recreation] *W27: "...I use a car for everything. I used to use a bus, I haven't got a bike for a long time, and so I sit myself in a car and go. I have all the equipment in a car. Say, if I would like to go, after work, to Šmarna gora, I already have clothes to change with me, and I can just go."* *W25: "If I go from home, it takes me more time to get there by bike, than by a car. It is the comfort as well as the lack of time. Also, many times I go with some friends, so it has to do with this, too."*	*W78: "We use a car. Cause you can stuff them all in."* [Grandchildren] *W69: "Well, we often go by car to Flotterstone. You could go by bus, but that takes you right into the Pentland Hills, but then you could come in to the other side by bus, I can't remember, is it a Penicuik?"*
- The process of moving	
M27: "I look at the closeness. I won't cycle more than 5km. I'd say I stay somewhere in the radius of 3km. […] *I consider cycling more as a transport means than as a recreational activity."* *W25: "The reason was the time. I guess, if you want to take advantage of an hour of free time, you need to get to the starting point by a car, then you do a bike tour, and then you put a bike in a car and drive back home."* *W26: I go mostly by bike. I don't have a car. I could borrow it, but... It happened in the past that I had borrowed one, and afterwards I regret it, because I would have been faster by bike."*	*W23: "I actually use the train sometimes to get down to the coast. Because, well, I worked at the healing centre over the summer so to get there you can just take the train down to the Forth Road Bridge and it gets you there in like 15 minutes, so..."*

W27: "It is definitely faster with a car, because, say, bus no. 13 to get to Šmarna gora... no way, no! I'd use the whole day for a trip, right. And, yes, it is practical; you get there in 10 minutes... The only problem is with parking." *M66: "I use a bike, and when it is raining, a bus, because a car is of no use in the city centre."*	
- Limitation of physical efforts	
M29: "Regardless of the fact that I am from Dravlje and so reasonably close to Šmarna gora, still, when I go there, I go by a car." *M70: "If I go to the areas further out – in the summer, I go often to the hills – I just take a car and drive there."*	*W30: "If I want to go outside the city to visit some green spaces, I go either with a bus to Roslin or something, or I go by car. You know, just get three people and go somewhere. Because cycling to the Pentlands is just too much for me, especially if then I want to do two hours walking. But I suppose there are other ways to get there. I know there is a bus, but I've never taken a bus to get there."*
- Physical exercise	
M27: "I never go with a car, always with a bike. I take it as a part of recreation – the way to go there by bike I mean." *M29: "I always use just bike for commuting and so I consider this as a part of recreation and perhaps this is why I don't feel the need to additionally ride to some green space where I would relax or play with a ball."* *M29: "I go by bike everywhere, also to the city centre twice per day. From my home to the centre is 5km. Today, for instance, I was at the Uni and now, again, I am here."*	*M20: "Yes, you can cycle there very easily, and you can like walk across the whole north face of it in two or three hours. It is on the edge of the city, but it is very wild."* [Pentland Hills] *W22: "Outdoors... I cycle quite a lot..."* *W80: "I tend not to take time for a walk, but I will be walking for the exercise."*
- Habits	
M29: "I cycle only in the city. To the bypass, for instance."	*W84: "We just go all in the bus."* *W70: "We have very good bus system."* *W78: "And we take the bus anywhere. Everywhere. We have a bus pass."*
- Preference for a particular mode	
W66: "Now it is nice to go through Koseze towards Bokalce by foot, so we don't have to wait for the bus No. 14 at the last stop. We found now a good way to go by foot." *W27: "Car, definitely. For what demands more effort, I always use a car."* *W68: "I go by bike. Unless I need to go somewhere more far. Because I live in the centre."* *W26: "I always use bike as a transport means, also to get out of Ljubljana: far, close, doesn't matter.*	*W23: "I really like the cycle paths in Edinburgh in general, just to travel around and sort of find any new places because they all seem to branch off. There are some places that are completely removed bike paths; there is one along the coast towards the Forth Road Bridge; it is right in the city, but it feels like you are already outside of it so quickly, because it is surrounded by trees, but the city is right above you, and so, I really like that one, is a nice cycle escape route, because you are so quickly removed."* *M75: "Well, buses are easy in Edinburgh, it is a superb city for buses. You can get a bus anywhere almost. And most of us being the age that we are, we have a free bus pass. That makes it even easier."*

	M75: "Now, I use my car much more now, because my wife is disabled and getting into buses is not good for her, so I use a car much more than I used to, but if I hadn't had to do that, I would just take the bus, because it gets you just anywhere where you'd like to go." *W21: "I think buses are really good."* *W30: "Yeah, I was just about to say: buses are impressive."* *W66: "It's preferable to take public transport if you are going to do the linear walk, because then you can get the public transport at the other end. If you are going to be doing the circular walk, then it's great to have the car, because it's obviously great to come back to the car."*
- Relaxation and enjoyment of the surrounding environment	
M27: "I walk because it is relaxing. And it is a part of recreation, too, since you walk to get there. I also bike a lot around the city, but it is a different experience when you walk." *W60: "...when walking or cycling I get the most from the space. I can stop, talk to people, I can see the plants or some houses, a church... And so I can experience every place very well and this is what it drives me to go by walking or by cycling."*	*W23: "I am mostly cycling. It is really good because you get to explore the places that you wouldn't normally go in the city."* *M20: "Just getting on a bike and getting somewhere; Edinburgh has really good cycle paths and this is a very good way to explore different parks. Like I had never seen Leith Links before and then I came across it and it was amazing."* *W27: "I also like walking on the streets, just to see around."*

Table 7.9: The reasons behind participants' preferences for the use of a specific means of transport.

7.1.3.2 Existing transport infrastructure – respondents' opinions of its connectivity, continuity and safety

Respondents' opinions of, and views on, the existing transport infrastructure and traffic management in Ljubljana and Edinburgh were different, which is to be expected, given the different structure and management of transport in both cities. However, the concepts that emerged from analysis of the discussions showed certain similarities. In relation to cycling, these were about (the lack of) safety when cycling on roads, and in relation to public transport, (the lack of) frequency and speed of buses.

The acknowledged differences between the two cities were associated with the connectivity and continuity of cycle lanes: whilst Ljubljana's participants felt that

their cycling infrastructure was poor, Edinburgh's participants agreed that it was well linked together, but they missed having more information about where the cycle paths are located. In addition, they would prefer designated cycle paths: some of participants would not even consider using a bicycle as a means of transport since they considered cycling on roads to be too daunting.

In sessions held in Ljubljana, a big part of the discussion was devoted to the topic of current management of the transportation infrastructure in the city by the city council. At the moment, this is a very topical matter, because a new transport strategy is in the process of being adopted. In addition, cycling has gained popularity in recent years and, with the introduction of a city bicycle scheme, the lack of cycling infrastructure has been exposed and thus highlighted by the majority of Ljubljana's participants who rode a bicycle.

With regard to public transport, many of Ljubljana's younger participants did not use it at all, for the following reasons: too expensive, too slow, and it had no connections. As an alternative, they preferred to use a bicycle. In Edinburgh, conversely, younger participants would use a bus to go to more distant places. This might be explained by the size and morphology of the city. Ljubljana, however, is smaller and almost completely flat which makes it easier to cycle in than in Edinburgh.

In Edinburgh, the discussions mainly pertained to cycling and walking, mostly because the majority of the participants, both younger and older, did not have a car. The issues raised, therefore, were concerned with the (lack of) communication between cyclists and pedestrians, and the safety issue when cycling on the roads. Most of the participants were happy with the bus network and distribution of bus stops. However, younger participants complained about the buses being too slow and not frequent enough, especially at the weekends.

Transportation infrastructure – connectivity, continuity and safety	
LJUBLJANA	**EDINBURGH**
Enabling/disabling personal mobility	
W60: "OK, we are pensioners, lets say we have more time. But still, those points that are important for recreation are not well connected. I have many difficulties, because I don't have a car. And I can't go by bike, in winter, to a foothill, to go from there to the top." - Vita: "So, do you feel disadvantaged without a car?" - W60: "Yes!" *W60: "Not just trains, there is also no buses!" - M70: "Possibly, but I don't know about this issues, simply because I have a car and I can just sit in and drive wherever I want."* *W72: "If you don't have your own car, then you are limited to your own neighbourhood."* *M79: "We didn't go to some places, because we didn't have transportation. But we walked everywhere."* *M79: "It is really good, now, that we have a bus to Podpeško lake. Number 19. It is a good starting point for many trips. For example: Sv. Ana, Sv. Jožef... what else... Žalostna gora, right?"* *M27: "I rarely go out of the centre of Ljubljana for recreation... mainly because I have low mobility. Otherwise, more or less, I use a bike. For example, last time I went to the Marsh by bike. I feel that I can get to the south of Ljubljana without any problem, because the edge is close to the city, but the north of Ljubljana... the distance to get to the edge of the city on the north, by bike, is much bigger. To Šmarna gora it is not worth going by bike. You need a car, indeed, or a bus, which is very time-consuming."* *W76: "In general, Ljubljana and surroundings have many green spaces, which are accessible, I have to say that. But if you'd like to go a bit further out, it's a problem, 'cause the public transport lines are cut. So if I don't have my own car..."*	*W21: "I love day tickets. It just feels like you have some freedom to just be able to get anywhere. Because if you get a day ticket, you can just end up going to lots places so you really feel like it is getting your money's worth."* [Laughs] *W23: "Because if you cycle there* [to Dalmeny] *or if you take a bus, it takes about an hour for both so that's a really nice option. The only thing that I find with a train is that it is difficult if you want to take your bike on it.* [...] *So that is one of the issues that I find with cycling is that you can't really go on the bus or train if you've gone too far and you wanna go further."*
Public transport	
- Not frequent	
M28: "Especially the bus no. 13 drives more by the calendar than by the timetable... [Laughs] *W67: "I don't like that, on Sundays, every bus drives on the interval of half an hour only."* *M27: "There is no public transport connection to the recreational and leisure destinations. Where there are, they drive only every hour on Saturdays and you just won't devote an hour of your free time to wait at the bus stop, right. So I prefer to take my bike and go wherever I want."*	*M28: "I think I would be going more around Edinburgh. Not inside the city, but to the outside areas. Because, as she said, the buses are very rare: if you miss the bus no. 10, you are screwed for the rest of the day."* *W69: "When you are going out of the city, you have to plan. Because there are buses, but it's not like being in the city where if you miss one bus, oh what the heck, there is going to be another one in 10 minutes! It's not like that when you leave the city so you have to plan it and have the timetable of what you are doing. So that might*

M27: "I'd even pay 2 euros if the bus picks me up 500m away and if I know that I will get one immediately."	*put some people off."*
- Slow	
M28: "I just went once to Šmarna gora by bus. It took me one hour to get there from Sostro." *M27: "I think buses should have their own lane. Because if the bus waits next to a car, it drives with a speed of 15 km/h and that's it, you haven't gained anything."*	*W75: "I would get bus number 21 that takes an hour and a half. I'd just take the newspaper and sat and read. It brings you right there, but I mean, if this is the sort of thing you are talking, but it is a barrier as well. It is kind of a nightmare getting there."* [To get to the Royal Infirmary hospital] *M63: "If I am going out to, say, North Berwick, Dunfermline, Stirling, it actually takes longer to get there through Edinburgh than to go to Stirling. Again, that's by bus."* *W27: "I think perhaps buses are harder to use, and very slow. If there was a metro or any other train connection to further areas, I would think of going to other places."*
- No connections	
M79: "Let's say that you would like to go somewhere more far, well, the transport connections with Ljubljana, both bus or train, are very poor, increasingly poorer!" – W76: "Yes, indeed, if you don't have a car, you are grounded to your surrounding area." *M79: "Ha, I tell you something: you can't get to Polhov Gradec, on a Sunday, they cut the line.* […] *Moreover, you can't get back home from Dolenjska on a Sunday evening – the last train is at 2 pm!"* *W25: "Bus connection is something we'd need. A circular route around Ljubljana. If I wanted to get to Uni from Murgle, where I live, I had to go first to the centre and then back out. It took me more time by bus than it would have taken me when walking."* *W25: Once, a friend asked me for an advice where to go to the hills by a train or by bus.... I spent two hours in front of computer searching where could I send her. If you have a car, you have many spaces accessible, but if you haven't got one... then you have a problem."* *W60: "If I don't have a car, I am in trouble, to get to the starting point to hike to Grmada. I can't always start walking from the front of my house."* *W60: "Not all the recreation points, especially on weekends, are well connected."*	*W73: "It seems that it is easy to get out to the arterial roads, but trying to get across from one arterial road to another, say through the middle of the town, is really difficult."*
- Expensive	
M29: "If the monthly bus ticket was 10 euros..." *W27: "It is cheaper with a taxi. If you share the cost."*	*W78: "And it is not cheap at all. For the threesome the bus is quite expensive."*

M29: "Cheaper public transportation. Look: we usually go at least three people. So if we all take a bus, and a dog, in addition – although mostly they wouldn't even take it – then you pay 60 cent for a dog, and 1,2 euros for each person... If we put all this money into a car use, we can almost drive for 100 km."	
Cycling	
- Connectivity and continuity of cycle paths	
M79: "...They could manage the cycle paths a bit better, no? There it is, and then it disappears, and then you don't know anymore where you are supposed to cycle." *M27: "The cycle path there is bad."* [To go to Šmarna gora] *W69: "It would be good to build cycle paths to go outside the city, in suburban areas, so you can cycle from Ljubljana to the nature. We are missing that!"*	*M21: "Yes and where they connect to the city centre, because they never actually connect."*
- Safety	
W55: "There is such a traffic on the roads that I am afraid to sit on a bike." *W60: "There should be more cycle paths to go out of Ljubljana safely, not like now, when you have to cycle on the roads."* […] *"Towards Črna vas and around there... in more natural areas."* *W26: "It is dangerous also because of the dirt on the roads.* [Cycling] *I mean, I get flat tire all the time."* *W69: "I find suburban roads very dangerous for cyclists. In fact, there is no cycle path at all. You cycle on that narrow stripe of gravel and you are in danger all the time, either of being hit by a car or to slip on the gravel."* *W69: "Wherever you cycle, to the Marsh, towards Gorenjska, or towards Tacen and Nikrče and Smlednik... I am always scared when I cycle there."* *W69: "There is a great cycle path to Brezovica, but, unfortunately, further towards Marsh and Sv. Ana, and towards Vnanje and Notranje Gorice, there is no cycle path anymore*. […] *And the cars drive so fast there. And the road is narrow and curvy and, yes, the locals drive very fast."*	*W21: "I go to Roslin Glen quite a lot, but it is a really nasty cycle. If you go to Lonehead, it is ok, but if you go to the other side, it is a really busy road, you don't feel very safe. But I think Roslin is the furthest place I go to very regularly."* *W21: "Yes, and even Lothian Road or Grassmarket, at rush hour can be pretty daunting."* *W21: "Well, I keep remembering that with a bike you can just get off. Like I was really scared of riding a bike when I first moved to the city, and my friends were like: do you know what, it's fine. Just get off it and push it. And it just totally made my life better."* *W21: "In my first year, I don't think I even left the Old Town boundary because I didn't know it was possible and I was too intimidated by riding my bike outside the Meadows and parks near there and I think just knowing how to bridge that gap and knowing how to reach them..."*
- Facilities	
W68: "I like Bicikelj, you just sit yourself on a bike, go wherever you want to go, and drop it off there."	*W21: ... like all the bike paths, there is tons of them. Like I was able to get from Gilmerton I had to get back from work and I thought: shit how am I gonna get back, and someone said: there is a cycle path that goes right to the city centre. And I was like: no way! Like no way that that is possible, and just carried on my bike on road. And*

	it turned out that there was this tunnel right behind my flat, and I was like: what the hell! Like bike paths and things... I feel like you shouldn't go out of your way to get this information. It should kind of..."
Walking	
- Tensions with cyclists	
	W69: "Things can get furious with bikes... I mean, we were walking along the canal and the bike just came behind and then they just go around you. They don't even have a bell!" *W74: "What I don't like with the Water of Leith is that the cyclists use it as well as the walkers. Because a lot of us is getting older by the day and have sticks and walking there is quite difficult."*

Table 7.10: The participants' opinions of and satisfaction with the transportation infrastructure and traffic management.

7.1.3.3 Hypothetically, what would change respondents' minds to use a different travel mode?

The participants were asked two 'what if' questions, in order to:

I. Explore participants' readiness to sacrifice their comfort and/or to change their travel habits, to achieve more sustainable travelling in general;

II. Uncover if the availability of a specific means of transport, which is at the moment not available to them, and/or the elimination of the restraints which they reported, would cause their frequency of use of peri-urban green spaces to increase.

The answers to this topic varied greatly and, therefore, no general patterns or predictions could be made. In terms of cycling, in both cities, the participants agreed that dedicated cycle lanes would ease their cycling and make them feel safer and more relaxed, and, in addition, would encourage them to cycle more, instead of using some other means of transport.

What if...	
LJUBLJANA	**EDINBURGH**
1. Changing travel habits	
Vita: "What would be the distance when you would take a car, rather than go by bike?" - M27: "According to me, you can't measure this in kilometres. If you have a nice path, which is well maintained and it goes a bit up and down, you can ride as well 10km without any problem." *W27: "If they rearranged Dunajska road, so you can just ride, without stopping..."* *W27: "I think my limit would be 30km in one way to use the bike instead of car. For recreational purposes, I mean."* *W70: "Rašica is a destination which is, relatively, a challenge to go up the hill and at the same time close enough to go there by bike or by a bus or by a car."* *W26: "I think that for the cyclist it is not very good taken care of. But I know that if I sat myself in a car, I would just make the situation worse."* *M29: "Perhaps something like Podpeč... if there is no traffic on the street."* [On the topic of how far would they cycle] *W25: "They could link it* [Bicikelj] *with the peri-urban areas. You get there by bike to go running. You park it there, do you bit of recreation, and then ride back home."* *M27: "I would like to have improved public transport, this is important. People don't realise that they could walk on all streets that are roads now. You can really quickly come anywhere with a bike in the city. In such a small city as it is Ljubljana..."*	*M75: "I use my car much more now, because my wife is disabled and getting into buses is not good for her, so I use a car much more than I used to, but if I hadn't had to do that, I would just take the bus, because it gets you just anywhere where you'd like to go."* *W23: "I think if cycling wasn't so scary I would cycle more. If I knew where the safe routes were."*
2. Frequenting peri-urban green spaces	
M27: "I think a bicycle is a great means of transport, especially to go around the city. If the authorities paid more attention to it, people would use the whole city more, not just their local area. Perhaps I'd also visit green spaces more, if I had a direct and safe cycle connections." *M27: "I don't have a car, but if I had one, I doubt that I would use it to drive to some green spaces in the surrounding areas. I think, in that case, I would go further out of Ljubljana. To the Marsh, that would be the closest, but otherwise more towards Gorenjska." – Vita: "Do you feel that you lack accessibility to green spaces now, being without a car?" – M27: "No, considering where I live at the moment, not at all."* [In the city centre and close to green space]	*M28: "I think I would travel more to the outside areas, if I had a car."* *W22: "Yes, I also think if I had a car, I would go more to the countryside of Edinburgh, where the landscape is very different from here. So it would be cool to do that. But I'd like a car and unlimited funds as well."* [Laughs] *M21: "I think for me, I don't really go out that much to visit some green spaces. If I would go by bike... I kinda would like to bike along the canal, which is nice the whole way. I've never been on bike on the road for an hour to get to a green space."*

W27: "I go to Tivoli by bike, but not to Šmarna gora, because I have a city bike which squeaks and has no lights." *M27: "I'd drive to the BTC or go for some trip.* [If he had a car] *W27: "After all, the greatest excuse is our laziness. Everything could be managed perfectly but you'd still have this constraint, just because you are lazy."*	

Table 7.11: The participants' willingness to change their travel habits if the transportation infrastructure and traffic management were improved.

7.1.4 Key conclusions

The focus groups proved to be a good method to confirm, reject, elucidate and supplement the questionnaire's results. The lively interaction among the participants, in addition, enabled some ideas to be clarified, new ones to emerge, as well as to confront and exchange opinions. The main findings, of the three investigated topics, are summarised below.

The findings from the focus groups, with regard to the **characterisation of peri-urban landscape**, showed that the idea of what peri-urban space means varies greatly for individuals. In general, participants associated peri-urban areas with certain land uses or a mix of land uses, respectively, such as shopping centres, open green areas, future development sites, landfills, ring roads, etc. The boundary of the city was, in Edinburgh's case, clearly expressed with the City Bypass. In Ljubljana, participants' answers to this question were less consistent, although, in general, they reported areas which correspond to the urban fringe area, as marked in this thesis (see Chapter Eight).

In terms of the **use of, and preference for, peri-urban green spaces**, the findings from the focus groups reinforced the results of the questionnaire analysis: people's preferred peri-urban green spaces were, in both cases, semi-natural areas and green corridors. However, for Ljubljana's participants, the remoteness of the place, from the built-up structures, was the characteristic most appreciated of the peri-urban green space they visited. Edinburgh's participants, conversely, were seeking their

chance to get away by going up onto high land, i.e. hiking to hilltops, where they could enjoy distant views and the feeling of freedom.

With regard to frequency of use, the focus groups' findings showed, similar to the questionnaire results, that the closeness of green space to respondents' homes was the most important factor relative to its use. However, although more rare, participants paid longer visits to green spaces located further from their home. In both cases, the participants also liked these spaces to be managed (in terms of facilities, e.g. bins, comfort points, etc.) and would not use them if they were not easily accessible. Visits paid to peri-urban green spaces alone or in company were, according to the questionnaire results, different for the respondents from the two cities. The focus groups' findings uncovered the reasons behind this: in Edinburgh, people prefer to go in company, for social reasons (younger people) and safety (older participants); whilst going for active recreation was the main activity of Ljubljana's young participants, Edinburgh's young participants would mainly go for relaxation and to enjoy some distant views.

The **accessibility and travel characteristics of peri-urban green spaces** were different in both cities. In Ljubljana, the participants exposed the poor state of cycle paths in terms of their connectivity and continuity. In Edinburgh, cycling was mostly associated with lack of safety since there are not many specifically designated cycle paths in the city. In addition, younger participants missed having more information about the locations of cycle paths across the city. In relation to bus networks, Ljubljana's respondents criticized the absence of bus services at the weekends. They agreed that if you do not have a car, many times, you are restricted to your local environment. In Edinburgh, the participants, in general, agreed that the bus connections were good, but they felt they are too slow, especially when taking a bus to get out of the city.

7.2 Interviews

This section presents the analysis of the interviews which were conducted with the relevant authorities, planners and academics, in both cities. The interviews were structured around three main themes:

1. The notion of the peri-urban area;
2. The knowledge of the level of use and understanding of possible problems with use/no use of peri-urban open spaces; and
3. The matter of accessibility to these spaces.

These main themes were supposed to help in constructing the answer (together with the other methods of data collection) to the following research sub-questions:
- What type of peri-urban landscape are inner-city dwellers attracted to for their leisure activities?
- How do current spatial planning and transportation policies match with inner-city dwellers' wishes and preferences for peri-urban landscape use? How do the policies enable or create barriers to the accessibility of the peri-urban landscape?

Working to a scheduled timetable, interviews were conducted after the questionnaire implementation and focus groups interviews had been conducted. The interviewees, therefore, were asked to comment on some of the findings from both the previously implemented methods. The main purpose of this was to obtain their views on the primary data findings and to see how they matched or contradicted with the wishes, needs and preferences of the city's inhabitants.

The interviews' findings are presented for Ljubljana and Edinburgh separately, due to the fact that the majority of questions were case-specific.

7.2.1 The notion of peri-urban area

This topic was discussed on the basis of maps covering the city and its surrounding areas. The interviewees were asked to delineate the area that they would consider as peri-urban and the area that they would consider as urban fringe.

I. Ljubljana

The interviews started with some general discussion about the city structure and its past and recent directions of development. The majority of the interviewees pointed out the city's geomorphological characteristics and transport and infrastructure corridors and as the basis and incentive, respectively, for the main direction of urban development. This also accords with the literature overview, as discussed in Chapter Two. In addition, the importance of the formal protection of prime farmland from development in the 1970s was stressed as an important mechanism which has stopped urban sprawl from developing, especially on the south side of the city.

The interviewees agreed that the characterisation of peri-urban area depends on the criteria set, which may be morphological, functional, or other. In general, they considered this space as not being (yet) rural but, at the same time, not having an urban character. This characterisation is in agreement with theory definitions (see Chapter Three). However, the interviewees' delineation of Ljubljana's peri-urban areas, according to their criteria, varied greatly. The results are presented in Figure 7.2, below.

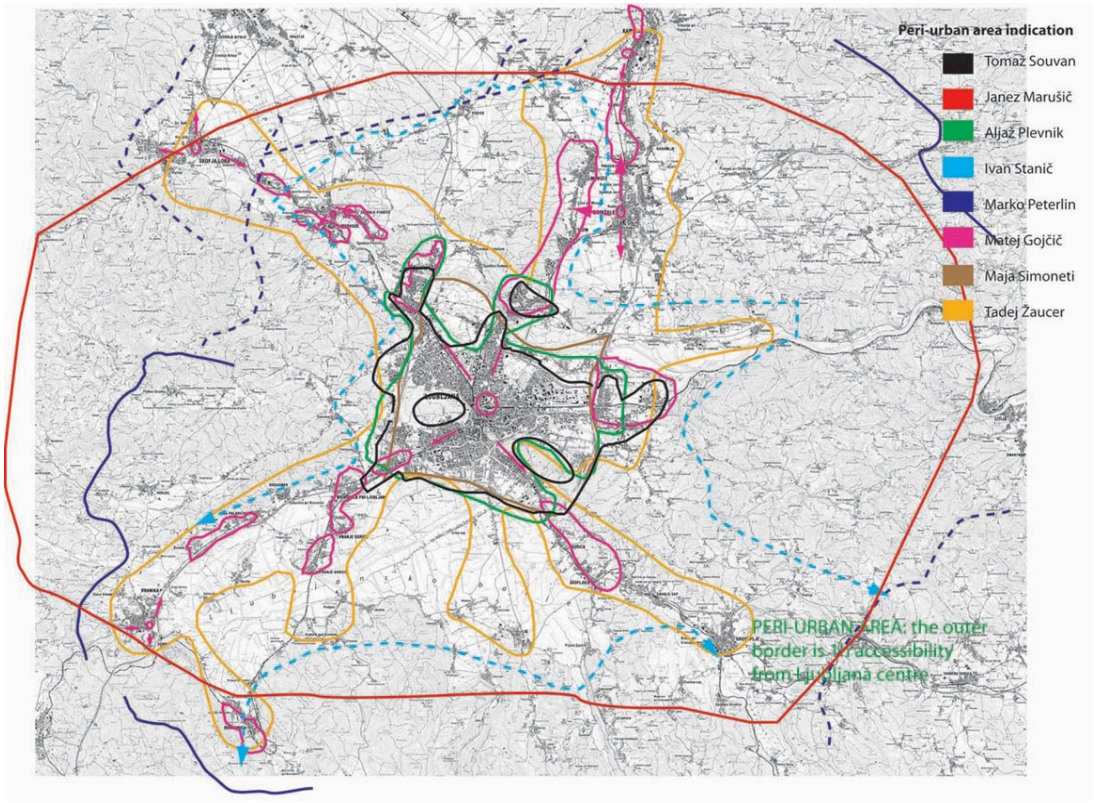


Figure 7.2: The interviewees' delineation of peri-urban area in Ljubljana.

The biggest difference in their delineation was between the indications and thus perceptions of peri-urban areas being related only to the settlement and, on the other hand, a peri-urban area, which encompassed both settlements and open space. For example, Marko Peterlin stated: "It certainly comprises both settlements and green areas. An urban area as a whole" (M. Peterlin, 2012, pers. comm., 2 July). On the other hand, Matej Gojčič delineated only the settlements in the surroundings of Ljubljana, without any other land uses. According to Tomaž Souvan, the head of the Department of Spatial Planning at Ljubljana's municipality, the present and future development of Ljubljana (with regard to built fabric) is limited to the area of the Ljubljana's Urban development plan[80] (in orange in Figure 7.3). The latter is defined by the compact built-up areas and areas of a predominantly urban character and thus it does not incorporate wider areas of other land use, such as agricultural fields and local woodlands and forests. Althrough the Municipal Spatial Plan encompasses the whole municipality area and thus generally covers also peri-urban areas, previously mentioned land uses are principally under the jurisdiction of relevant sectoral ministries. However, since the peri-urban open spaces are not urban in ther character, sectoral management may facilitate fragmentation of these areas and leave space open for land speculations.

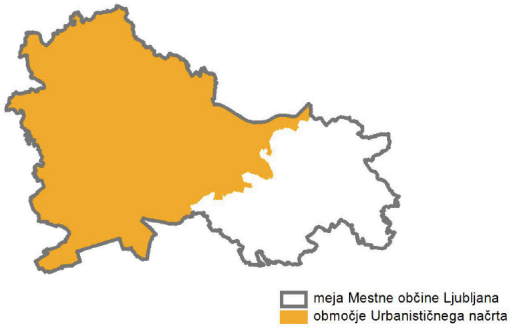


Figure 7.3: The area of Ljubljana's Urban development plan (in orange) within the Ljubljana municipality (MOL, 2010, p.11394, illus., Slika 6).

Nevertheless, the area of Ljubljana's Urban development plan, as shown in Figure 7.3, above, encompasses some peri-urban open spaces. At the same time, these are sharply cut by the boundaries of the plan/municipality, therefore, it can be argued

[80] Urban development plan (UN) is prepared as a basis of a Municipal Spatial Plan (OPN).

that the appropriate level on which peri-urban areas should be dealt with is the regional level, which encompasses both settlements and open space areas.

Furthermore, urban fringe areas, it can be argued, are the areas to be managed at the municipal level. This was determined on the basis of the literature review, land use analysis of both case studies and interviewees' characterisation of it. The latter was achieved with both a drawing-based task and questioning them to describe these areas.

Their sketches have revealed that the fringe is, in general, perceived as considerably narrower than the peri-urban area, and represents an area which is frequently visited by city inhabitants. As such, it encompassed green spaces like Rožnik and Šišenski hrib and part of Golovec. Accordingly, the urban fringe of Ljubljana may be understood as the outskirts of Ljubljana, which is well used by its inhabitants for their leisure and recreational activities.

The two above-mentioned green wedges, Šišenski hrib and Golovec, were acknowledged by the interviewees as being the most important recreational and leisure green spaces of Ljubljana's inhabitants. However, both were preserved for this use predominantly because of their geomorphology which has been a constraint on further urban development.

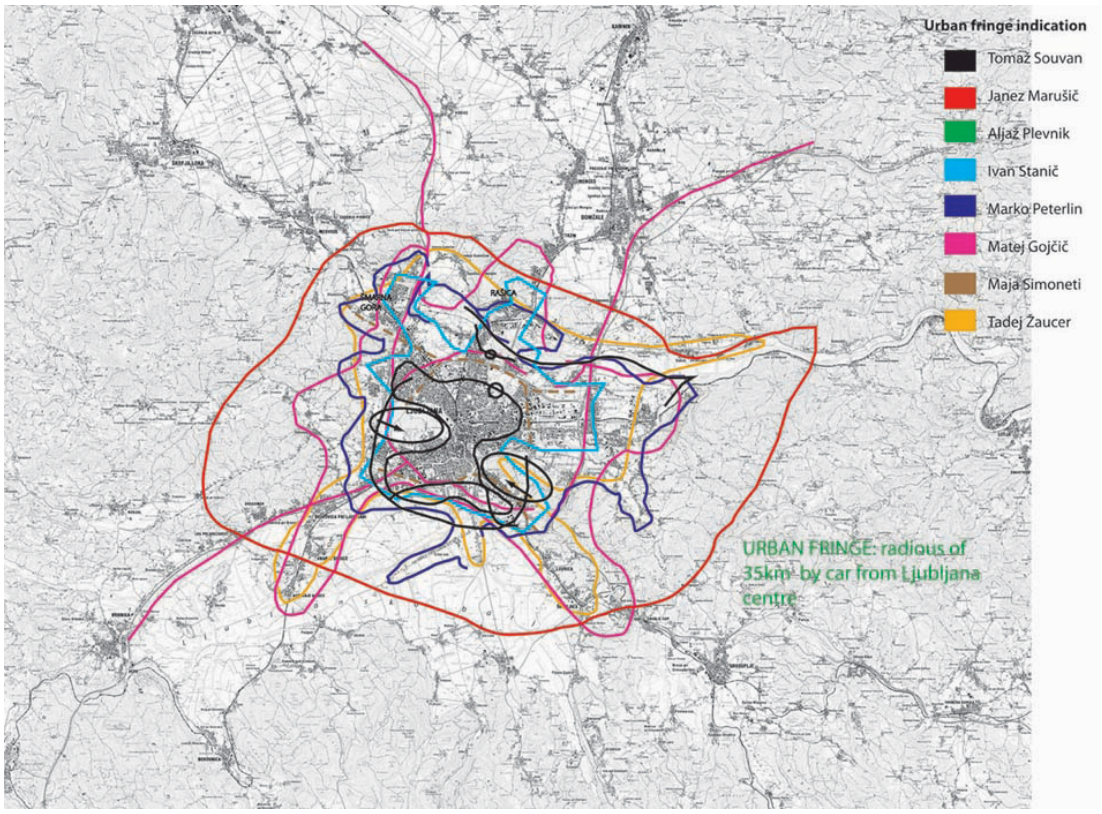


Figure 7.4: The interviewees' delineation of urban fringe areas in Ljubljana.

Interestingly, none of the interviewees considered the peri-urban green open spaces of Ljubljana as being under threat from development. Development, in their opinion, usually occurs close to urban cores. Rather, they expressed a concern about accessibility to these spaces. This, they claimed, is poor, for some interrelated reasons: the primary land uses of peri-urban green open spaces are agriculture and forest, and thus, although formally accessible, are not planned for recreation, and they are lacking in facilities and other elements of urbanity which would draw city dwellers to use them. The interviewees' opinions correspond with some older research, which showed that, despite the quantity, accessibility, structure and quality of Ljubljana's green open spaces, people have been not found them satisfactory (Simoneti, 1992). The interviewees stressed the accessibility and provision of basic facilities as the most important factors for their use of peri-urban green spaces. Both the authorities as well as the independent researchers and professionals interviewed for this research pointed out that poor accessibility pertains more to visual inaccessibility than to physical inaccessibility. To explain further, although there is

legal right to access to most of the peri-urban open spaces, their primary land uses are agriculture and commercial forestry and these areas are thus not specifically designed for recreation and leisure purposes. This, at the core of things, has affected peri-urban open spaces more than actual development.

The interviewees saw a solution in active management, rather than (more) protection. Cultural landscape, a combined work of man and nature, is a type of landscape which is appealing to people. This managed landscape would, therefore, attract people most for their leisure and recreational activities. In addition, actively managed land prevents the occurrence of secondary unwanted uses, such as landfills, dump lands, etc. The interviewees from the authorities agreed that the municipality would like to conserve such places, but, on the other hand, the maintenance and care of the land for recreation is expensive. In sum, the main threat to these spaces is not lack of formal protection but stagnancy and lack of management and care of them.

II. Edinburgh

In Edinburgh, some of the interviewees had difficulties in understanding the term 'peri-urban area' or what would correspond to it in Edinburgh's case, and therefore, they refused to indicate it on a map. The other interviewees stressed that Edinburgh does not have peri-urban areas since the bypass and the green belt beyond it have made a great distinction between what is urban and what is rural. In addition, open spaces such as Arthur's Seat, the Pentland Hills and Corstorphine Hill, which sit in an urban area, tend to be rural in terms of their characteristics. Finally, the peri-urban area indication, of those interviewees who drew a delineation, to a great extent coincides with the area of the Rural West Edinburgh Local Plan, as can be seen from the images below, in Figure 7.5.

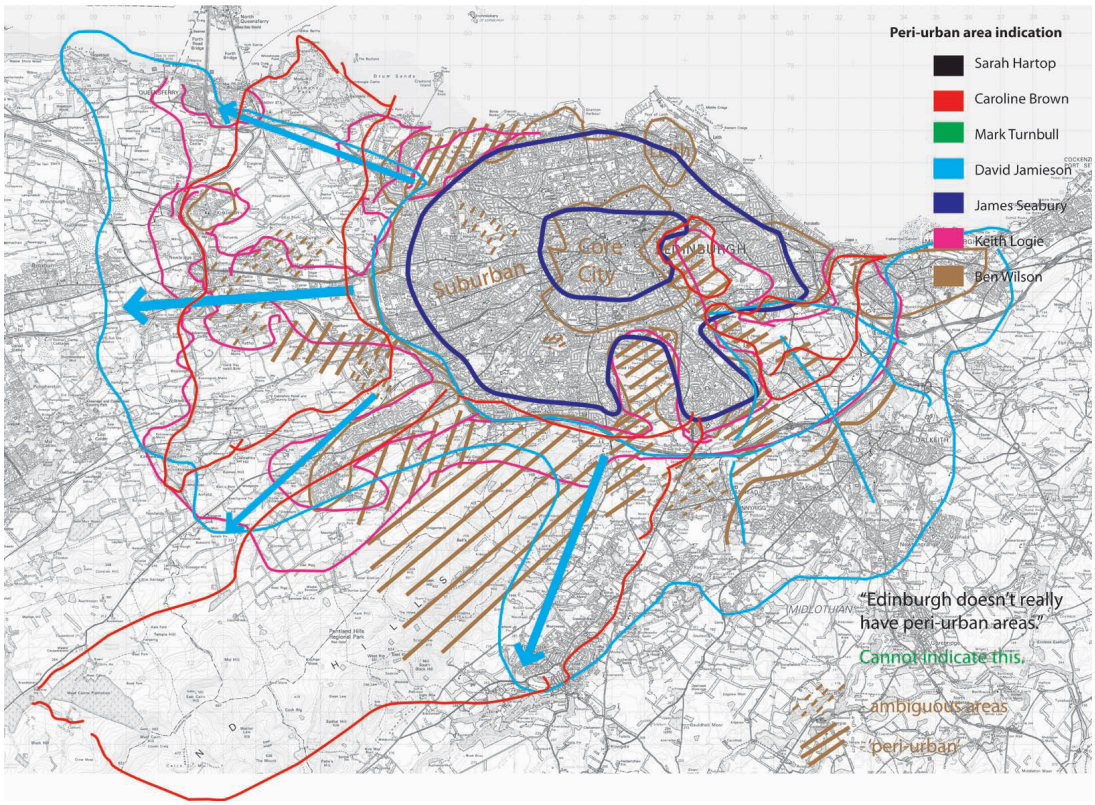


Figure 7.5: The interviewees' delineation of peri-urban areas in Edinburgh.

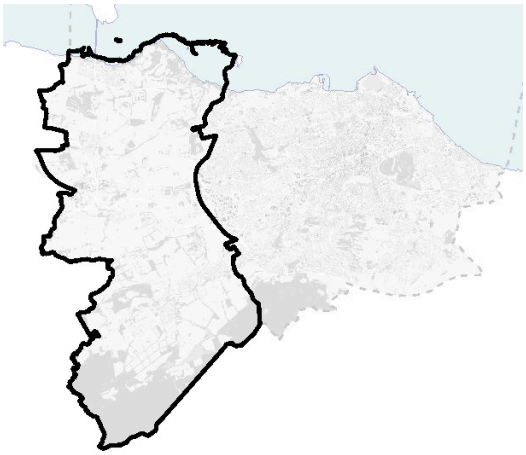


Figure 7.6: The area of the Rural West Edinburgh Local Plan (RWELP) within the City of Edinburgh area (CEC, 2011c).

With regard to Edinburgh's urban fringe, most of the interviewees agreed that the urban fringe would correspond to the same area as the peri-urban area of Edinburgh. In addition, urban fringe implies an area in transition (which in Edinburgh's case, being a well defined city within the urban belt, it does not have), or, which is more

likely, in-fill areas, areas mostly associated with built uses (e.g. science parks, the airport, Riccarton), and narrow strips of land close to the bypass.

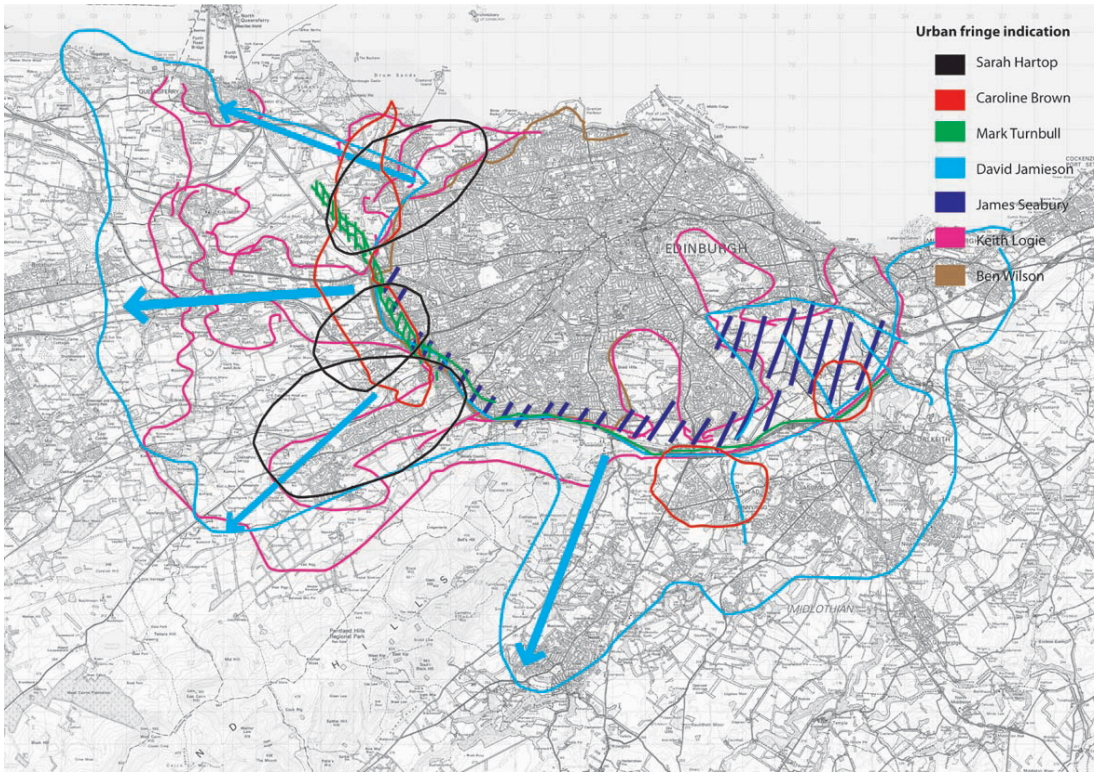


Figure 7.7: The interviewees' delineation of urban fringe areas in Edinburgh.

The interviewees from the authorities agreed that the City of Edinburgh Council has appropriate policies to restrain large-scale development in peri-urban areas. However, two threats exist that threaten the loss of green spaces, as follows: first was losing green spaces in less affluent parts of the city, because their intrinsic value is not as great. The areas mentioned were around Craigmillar and Leith. To deal with this issue, the Council has formalised a standard which defines the amount of minimum open space which needs to be assured, for any particular area. The second is associated with a more strategic issue: the pressure for development on the west side of the city, since this is the only side of the city with no physical barrier for expansion. This would consequently affect the green belt. The Council interviewees were aware that the public may react to the possible changes of green belt very emotionally. As Caroline Brown stated, the green belt policy: "is very well understood by members of the public. So people know that the green belt is the area

around the city, it is defined and you don't build on it" (C. Brown, 2012, pers. comm., 5 Dec.).

With regard to green open areas within the green belt, they agreed that, in general, these are proactively managed, which was an action that was missing in dealing with the kind of spaces in Ljubljana, as reported in the previous section. In Edinburgh's case, active management, on the whole, pertains to keeping these areas in a semi-natural state and at the same time, making them accessible to people so they can enjoy the countryside. However, some concerns have been expressed as to the use of green open areas within the green belt. David Jamieson and Keith Logie, for example, stated that there is a lot of open space which is predominantly for agricultural use and thus does not get used very well for recreational purposes, neither is it particularly attractive for wildlife. The establishment of multifunctional routes for pedestrian movement, i.e. green corridors, from the city, was mentioned as an important action to enhance accessibility to the countryside, and recreational use. Mark Turnbull missed having more people involved in proactive management, which would, in turn, make them more responsible for these places. Nevertheless, appropriate management and the high quality of the natural environment were, according to the interviewees, the key reasons why people value and use these spaces.

7.2.2 The use of peri-urban green spaces

In this section, I intended to find out about interviewees' knowledge of levels of peri-urban open space use and, consequently, compare their answers with real-life use, as revealed by the results of the primary data collection. They were also asked to indicate green spaces, both urban and peri-urban, which they thought were used the most by city-centre inhabitants.

I. Ljubljana

The two green wedges, Šišenski hrib and Golovec, were pointed out by all interviewees as the most used green spaces. Places also mentioned as being frequently used were Mostec, Šmarna gora, Rašica, PST, and Marsh. Interestingly, in

regards to the Sava river and its banks, the interviewees' answers were contradictory. Some of the professionals regarded it as being among problematic green spaces because of its poor accessibility and hence, being an underused area. Interviewees from the authorities, conversely, mentioned it among the most well used green spaces. When I informed them about the questionnaire and focus groups' results, which showed that this space is not much used by city-centre dwellers, they referred to people's mental image of the Sava river as being unmanaged green space, whereas recently, this space has been improved in terms of clearing the undergrowth, setting picnic spaces and building pedestrian and cycle paths along the river. They stressed that the city council is aware of the fact that the northern parts of Ljubljana have less opportunity for recreation, especially for recreation in a less urbanised, semi-natural environment. Therefore, the Council has been investing in the development and improvement of some of the green areas on this side of the city.

The problems of Ljubljana's green spaces, in the interviewees' eyes, are two-fold: on the one hand, some of the green space areas have been overused and thus degraded for this reason (e.g. Rožnik, Golovec, Šmarna gora). Consequently, these spaces lack management and restoration. On the other hand, there are open spaces which are not much used due to poor accessibility, in particular, via an alternative means of transport (e.g. Ljubljana marsh, rivers Sava and Ljubljanica).

However, according to the interviewees' answers and the researcher's own investigation, no comprehensive statistical information on the levels of green space use in and around Ljubljana, for recreational and leisure purposes, has been made or they were aware of it. They referred to some partial researches which have been carried out for specific purposes. As Figure 7.8, below, shows, in the interviewees' opinion, Ljubljana's city-centre inhabitants use a much greater number of urban and peri-urban green spaces than the questionnaire and focus groups' results have shown.

In the same vein, the interviewees' opinions of public involvement in planning decisions, and the level of their preferences and wishes', varied greatly between the authorities and planners. The interviewees from the municipality referred to the

formal procedures of public involvement, where the public is invited to comment on public presentation of a development plan. The professionals expressed concern about the public being acknowledged too late in the process of the plan's acceptance, and even then, on many occasions, their comments would not be taken into account. In addition, according to interviewees from the authorities, people's needs have been acknowledged primarily through their use of green spaces, rather than by asking them about their wishes and preferences. This, however, only results in the improvement of already well-used green spaces and not the ones that may be potentially attractive to city dwellers, on the basis of green spaces' improved accessibility and management.

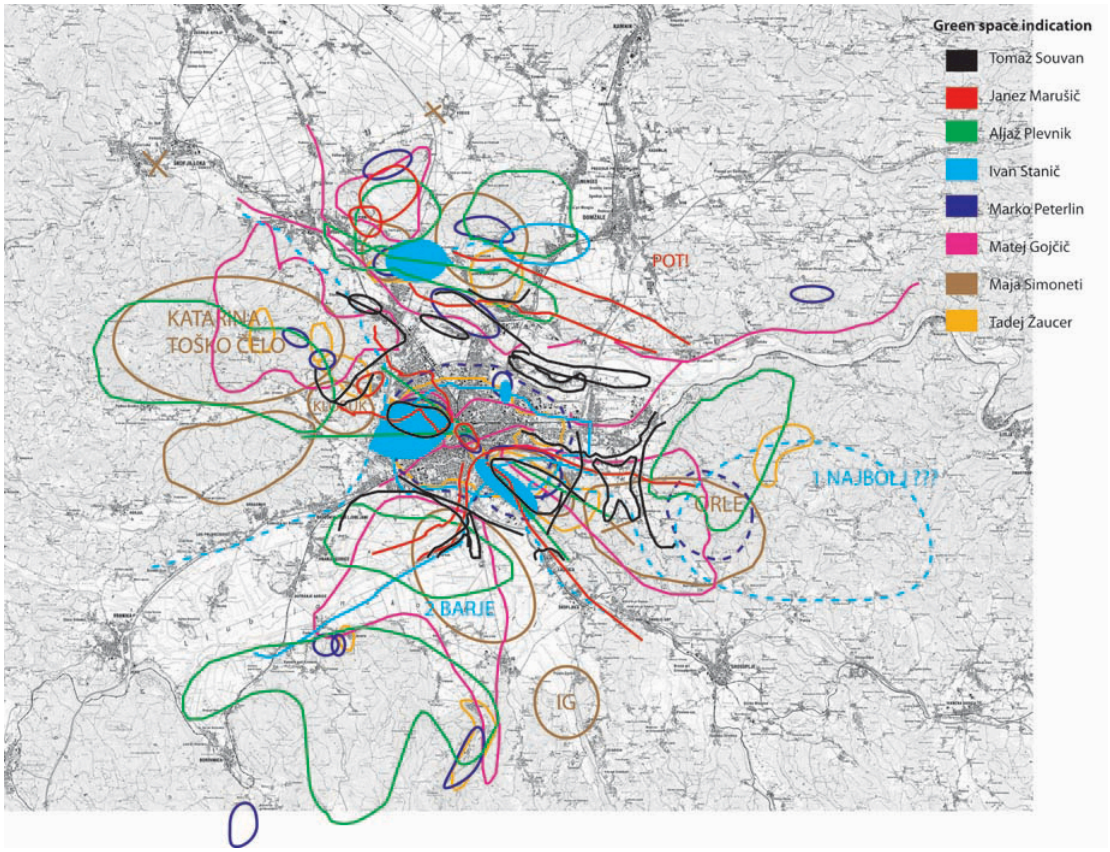


Figure 7.8: The interviewees' indication of the most used urban and peri-urban green spaces in Ljubljana.

II. Edinburgh

The interviewees agreed that urban parks and other urban green spaces are those ones that city-centre inhabitants use the most. Some of the places mentioned were

Princes Street Gardens, the Meadows, Holyrood Park, Calton Hill, the Botanic Garden, Corstorphine Hill, Blackford Hill, Water of Leith and the Union Canal. The drawing task associated with this question confirmed that, in terms of the interviewees' perceptions, city-centre inhabitants mostly use green spaces within the city (see Figure 7.9). In relation to peri-urban green spaces, they indicated the Pentland Hills, Cramond foreshore and both corridors, the Water of Leith and Union Canal. Interestingly, none of the interviewees specifically pointed out Portobello, which was a green space frequently used by city-centre dwellers, according to the questionnaire and focus groups' results. However, in Edinburgh, contrary to Ljubljana, interviewees were able to provide some information on the statistics of green space use. Moreover, the City of Edinburgh's formal urban green space strategy, Parks and Gardens Strategy, has been made on the basis of a user survey, which was carried out several years ago.

The Parks and Gardens Strategy was published in 2006 and "[...] is a means of matching the availability, function and role of parks and gardens with the changing requirements as identified by user surveys (WJ Cairns and Associates, 2006, p.1). Keith Logie stressed the importance of action plans for individual parks and gardens, which is a guide for the actions over the next 25 years, in order to meet the standards. However, it should be noted that the strategy considered urban parks and gardens only, whereas parks in rural areas are considered as a part of the whole parks system, but are not included in the strategy to a great extent. Nevertheless, the intention behind green space management in Edinburgh is, according to the authorities, to combine quantity, quality and accessibility of green spaces.

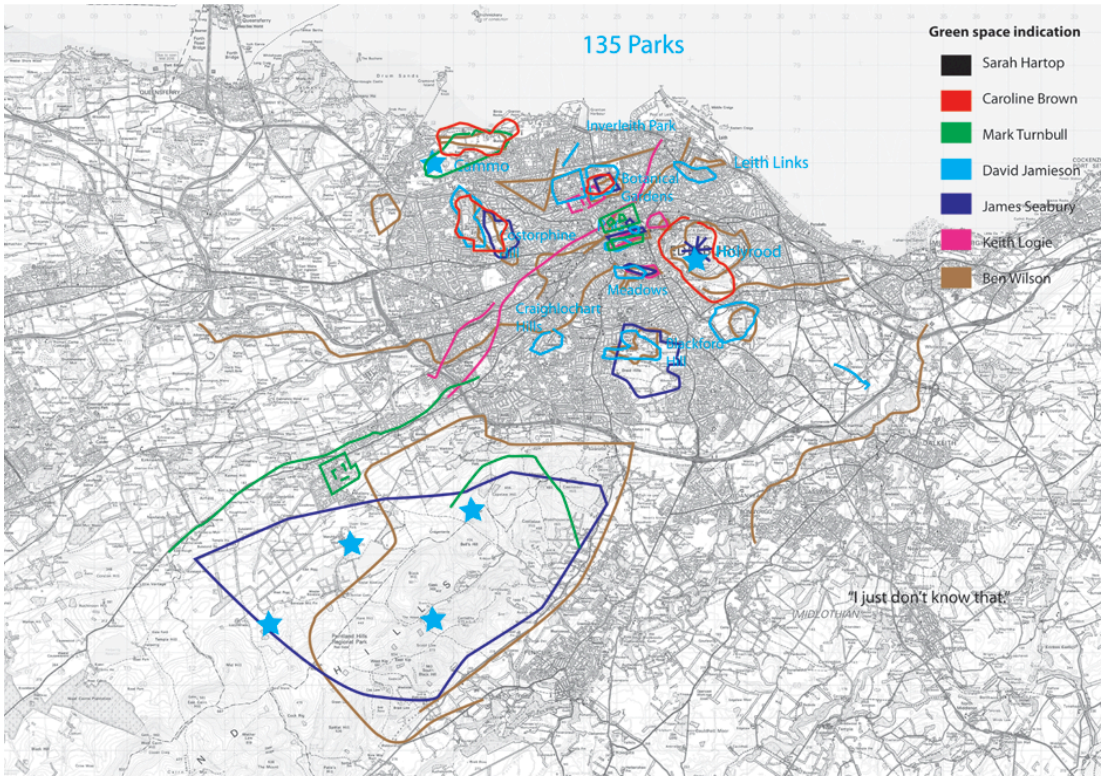


Figure 7.9: The interviewees' indication of the most used urban and peri-urban green spaces in Edinburgh.

In relation to less affluent green spaces, Craigmillar has been mentioned as an area where public green space does not reach a satisfactory level of quality and accessibility, and also Sighthill and the SE wedge, which are both areas currently undergoing a regeneration process. The interviewees also stressed the existence of a derelict and vacant land survey, which is a base document for the improvement of these areas.

Public consultation was a topic on which the opinions of the interviewees from the authorities' side, and those from the professional and academic side, diverged the most. On the one side, interviewees from the authorities argued that full public consultation occurs on every land use policy that the Council develops. For example, David Jamieson stressed: "Pretty much everything we do, has a strong citizens' engagement process" (D. Jamieson, 2012, pers. comm., 11 Dec.). This is done at various levels, such as through community councils, Neighbourhood Partnerships, environmental groups, Friends of Parks, etc. To reach the public as widely as

possible, they also use different media, e.g. going to local shops, holding meetings in local areas, and putting information on social media such as Facebook and Twitter. However, they noted that it is sometimes hard for the public to engage with strategic issues, so they consulted in more depth at the audit level, where people can recognise their local green space. It is sometimes, due to the variety of views, hard to engage with the public but documents produced in this way raise the public's confidence in a document and thus give it more authoritative weight.

On the other side, however, planners and academics noted two issues pertaining to public engagement. First, there have been many strategies prepared by the City of Edinburgh Council, but these eventually do not get implemented. They mentioned various reasons for this, e.g. lack of staff capacity, austerity, etc. Second, the public is consulted, but their views appear not to be taken into account. However, this may be predominantly because people are not interested in getting actively involved in any consultation. In relation to this, academics and planners also expressed the wish that the public should be more integrated into the management process itself, since if people care for their local place, they will take care of and improve it. This, however, is a question of people's indifference to being involved locally, which is a topic not of direct relevance to this thesis and therefore, it will not be discussed further.

7.2.3 Accessibility to peri-urban green spaces

I. Ljubljana

In recent years, Ljubljana has been undergoing a significant increase in the numbers of people who have taken up cycling, especially in urban areas of the municipality. Primarily, this is a consequence of the city's strategy to limit car accessibility in city-centre areas. However, the level of accessibility from city-centre areas to the edges of city, for leisure and recreational reasons, is still not satisfactory and, in the interviewees' opinion, it should be more of a concern in future planning.

The most pressing issues, mentioned by the majority of the interviewees, were the lack of cycle paths' connectivity and poor public transport in terms of frequency and nodes' distribution.

With regard to cycling, the interviewees from the Council stressed that Ljubljana's strategic development plan has foreseen to improve the connectivity of paths in some places, e.g. to establish connected paths along the Sava river in the municipal area, to make improvements to Ljubljanica river banks, etc. However, given the fact that the timeframe for implementation of these plans is not specified in the development plan and that the Council's priority list of actions is primarily concerned with issues related to solving transport problems in the central areas of the city and ensuring public transport connections for work/school commuting, improving accessibility, for recreational and leisure purposes, is only a secondary consideration. In addition, there is no plan to connect some of the popular recreational destinations, to the bus network, in the near future.

The public transport connection improvements that the interviewees mentioned included the extension of some of the bus routes. Again, the primary reason for these extensions was to connect different suburban settlements with Ljubljana for work/school commuting, and accordingly, the frequency of buses is high during weekly working hours but it drops at the weekends.

The interviewees doubted there would be an increase in the use of buses and cycle paths if these were improved. The reasons they specified were: firstly, the comfort and convenience of using private transport and the culture of society, which, overall, is wedded to using the car; and secondly, people not being informed of alternative ways of access. They saw the opportunity for this in social media, especially with regard to younger generations.

The interviewees' views as to which means of transport should be prioritised differed, depending on whether they worked in the city or in the local region. Whereas the former group argued for the promotion of cycling and walking as

important to achieve sustainability aims, the latter considered that Ljubljana should be investing in the improvement of a public transport network, which would reduce the use of the car, for daily commuting, from neighbouring areas to Ljubljana.

Ljubljana (and its urban region) is lacking a comprehensive, long-term strategy, which would provide a basis for a qualitative assessment of individual measurements, with regard to long-term goals. The interviewees' contrasting opinions on which actions should be taken first are an example of a confusion which may be caused by the inability to set priorities within a broader scope.

II. Edinburgh

All interviewees agreed that accessibility is, in general, satisfactory. With regard to specific means of transport, the interviewees' opinions differed from the focus group participants' opinions on the level of accessibility by a specific means of transport. The interviewees thought that the cycle and footpaths are good whilst the bus connections are limited once you are out of the city. The focus group participants, on the other hand, were unhappier with the connectivity and safety of the cycle and footpaths.

Nevertheless, the interviewees stressed that the Council has been working on improvements to ensure more connected cycle and footpaths and to establish traffic-free routes in parts of the city that are currently without them. In terms of access to peri-urban areas, the Council has identified critical cycle links on the edge of the city which are planned to be improved. The interviewees stressed that they work with cycling communities, volunteers and other groups, on these issues.

Similar to Ljubljana, the interviewees in Edinburgh also mentioned a lack of information to allow and help people to access and use green spaces. With regard to information provision in the format that people will use, they, like the interviewees in Ljubljana, mentioned social media and smart phone applications.

7.2.4 Key conclusions

This method showed the extent to which the representatives from local authorities and professionals are aware of, and understand, the peri-urban issues explored in this thesis. The main findings of the interviews were, as follows:

Ljubljana:

The concept of what corresponds to peri-urban areas varied greatly between the interviewees, both in terms of scale and the land uses these areas encompassed. The responses to the latter did, in particular, differentiate peri-urban areas as comprising settlements and open spaces versus peri-urban area which pertains to built structures only whereas the surrounding open spaces were perceived as natural areas. The areas which corresponded to urban fringe were perceived more consistently among interviewees: this was a narrow area on the city boundaries.

With regard to the use of peri-urban green open spaces, the interviewees seemed to believe that city-centre dwellers use these spaces much more than the questionnaire and focus group findings have shown. The interviewees were aware of the poor management of some places, which was, in their opinion, the main constraint for not visiting peri-urban green spaces. With regard to accessibility, mainly, they saw the potential of cycling, though they agreed that improvements to a cycle network would need to be made in the future, in order to enable and enhance cycling to green spaces.

Edinburgh:

Interviewees, in general, agreed that Edinburgh does not have a peri-urban area as is characterised in some other parts of Europe (e.g. the Netherlands, Germany); rather, the division between rural and urban is very distinctive due to a green belt strategy and other management strategies of this area. Urban fringe, in the interviewees' eyes, was mainly linked to individual derelict/vacant sites on the edge of the city.

In Edinburgh, contrary to Ljubljana, the authorities keep a record of green space use through various qualitative and quantitative methods (e.g. surveying, counting visitors, interactions with local communities, etc.) In their view, city-centre dwellers

mostly use urban parks, whilst they use peri-urban green spaces only occasionally and for longer, usually, weekend visits. They acknowledged the beach/foreshore, in the northern part of Edinburgh, as a green space that is not used enough, which is an important fact since the beach ranked high among the green spaces most used by the questionnaire respondents. In terms of accessibility, there was less consent among the interviewees. Some of them regarded the cycle infrastructure as not being safe enough for cycling and inclusive to everyone, whilst others thought that the bus service would need to be more frequent, to serve peri-urban green space use.

Chapter 8: Spatial data analysis and results

This chapter presents the findings of the secondary data collection (i.e. spatial part of the study). This pertains to the analyses carried out in a GIS-based environment: the overlay analysis to delineate the peri-urban landscape of both cities,[81] and the Structural Accessibility Layer, to uncover the accessibility levels to peri-urban areas, by different means of transport.

The purpose of the both data collection methods was to provide sufficient information to address the following research sub-questions:

- How do perceptions of access by means of transport affect usage?
- How do current spatial planning and transportation policies match with inner-city dwellers' wishes and preferences for peri-urban landscape use? How do the policies enable or create barriers to the accessibility of the peri-urban landscape?

8.1 Overlay analysis

Section 5.1.5, in Chapter Five, described the formal procedure and criteria for the delineation of peri-urban areas in both of the case study cities. The whole procedure was carried out using Proval 2000 software (ONIX, 2000), which enables overlaying data on the basis of pre-set criteria. As follows, the procedure of combining data, in order to achieve the final delineation, is presented graphically for both cities (Figures 8.1 and 8.2).

[81] Detailed reasons for which overlay analysis was used in this thesis are listed in Section 4.3.2.1.

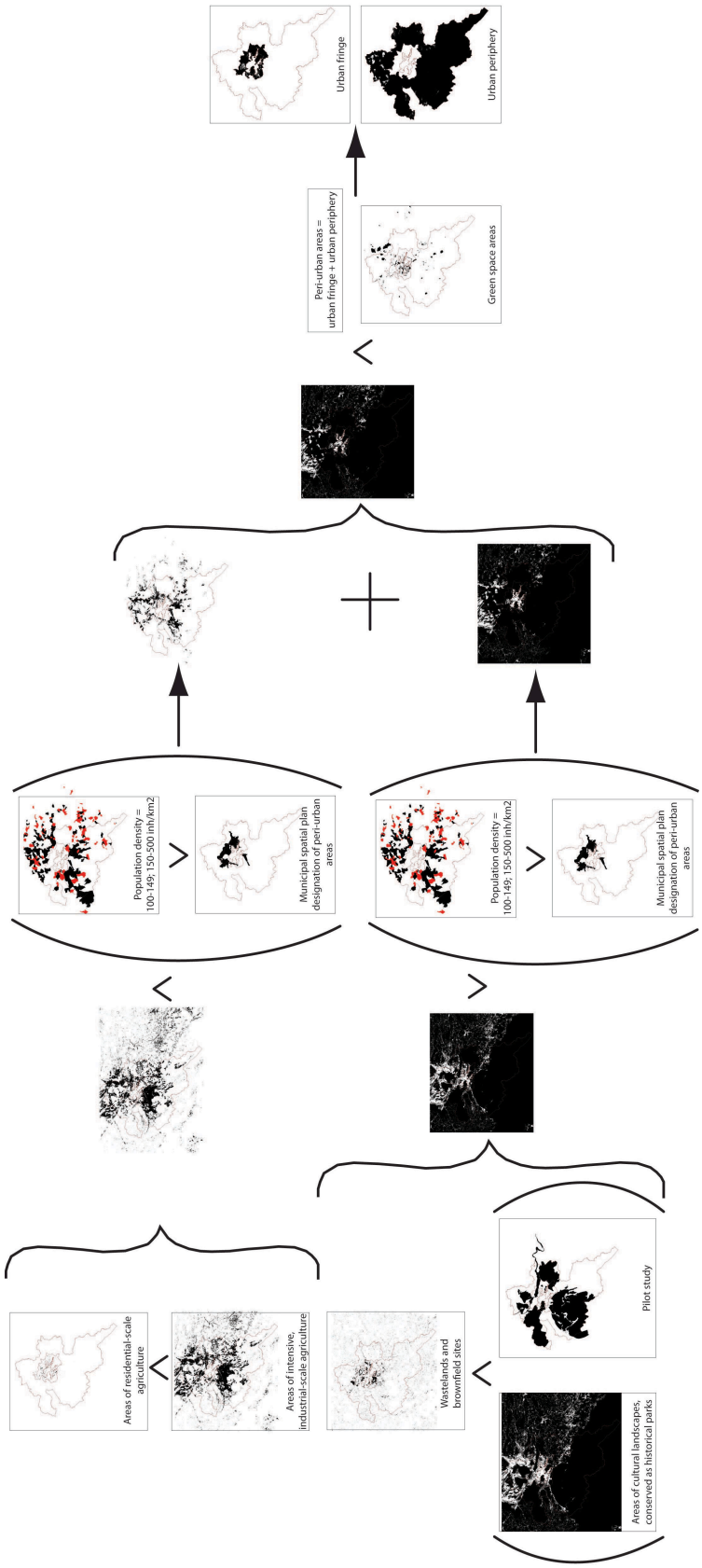


Figure 8.1: The graphical representation of combining data in the peri-urban area delineation, in Ljubljana.

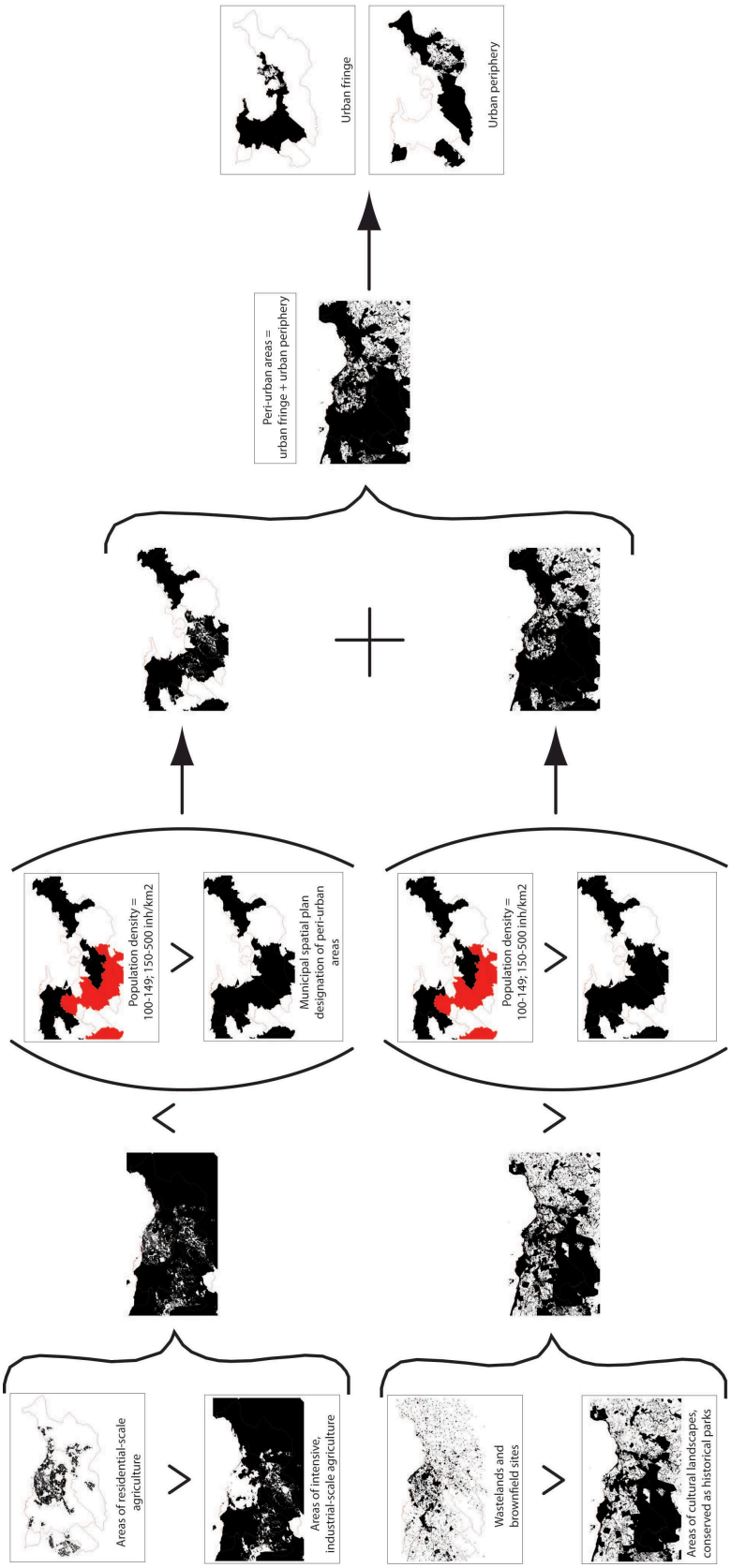


Figure 8.2: The graphical representation of combining data in the peri-urban area delineation, in Edinburgh.

The data, clustered in general peri-urban land use types, was merged using two mathematical commands: intersection of sets and union of sets. A decision as to which of the two commands to use to combine certain data sets was made based upon the findings of the previous methods: the literature review pertaining to peri-urban areas, analyses of land use and the historical development of both cities, the focus groups, and interviews. The findings were used at different steps of the delineation: the findings from the interviews helped to identify the appropriate scale for the delineation, the findings from the focus groups and partly, the interviews, were used to evaluate general land use types, and the academic literature and formal policy documents were the basis for the locally specific assignations of peri-urban areas. The next three paragraphs describe, in more detail, the application of the findings of each method in the delineation process.

The sketches of peri-urban areas in the delineation, which were the outcome of a drawing-task while the interviews were conducted (see Section 7.2.1 for details), were the basis for a decision as to the most appropriate scale for the delineation of the peri-urban area. The interviewees in both cities agreed that this landscape should be addressed at a regional level, therefore, all the neighbouring municipalities were considered in the analysis, alongside the municipalities of both cities. In addition, the interviewees' sketches have helped in the final manual delineation of the urban core, urban fringe and urban periphery area.

The findings of the focus groups have shown that people see the peri-urban landscape as an area which is either low-value land, cluttered with landfill sites, brownfields, wastelands etc., or as an area of semi-natural, green open spaces, which they value and use. The delineation process, therefore, was made with a certain bias towards natural features and degraded areas (this approach was used to combine the areas of wasteland and historical parks, with the administrative concept of a peri-urban area, whilst the agricultural areas were merged with the administrative concepts using an intersection command).

Both clusters, areas of intensive scale agriculture (AIA) and areas of residential scale agriculture (ARSA), and wasteland and brownfield sites (WBS), and areas of cultural landscapes, conserved as historical parks (HP), were overlaid with the data sources of the peri-urban areas, as designated in local development plans and/or other formal documents. The literature review was used to determine the most discriminating population density for each peri-urban area (i.e. (100)150-500 inh./km^2) (Perpar, 2009). The published development plans were overviewed and the areas which were considered as peri-urban in those documents were overlaid with the areas of peri-urban population densities.

The final outcome of the delineation procedure was the area of urban fringe and the area of urban periphery, as presented in Figures 8.6 and 8.11. What follows is a commentary on the individual steps of the procedure and the final, specific outcome, for each city.

Ljubljana

The areas of intensive, industrial-scale agriculture, were very dispersed and fragmented, reflecting the spatial characteristics of the Slovenian agrarian structure (Cunder, 2002). Few areas of residential-scale agriculture were recorded and even the existing areas were mainly located within the city, presenting as allotments, as assigned in the city's most recent development plan. Areas of wasteland and brownfield sites were dispersed and, given the size of these plots, it suggests that these predominantly degraded areas are individual parcels of land, most likely, for private use. Only the larger areas were located on the edges of the city, indicating typical abandonment of areas that previously had been for industrial use.

Figure 8.3: AIA (left) and ARSA (right) areas of Ljubljana and its surroundings.

Areas of cultural landscapes, conserved as historical parks, covered the largest space of the area under consideration because in analysis, all the forested land was taken into account. Hence, criteria may need to be set in a stricter way, prioritising some forest designations and/or excluding the others. However, since the focus groups' results showed that a forest is a favourable green space type for recreational and leisure activities, all forest designations were included in the analysis.

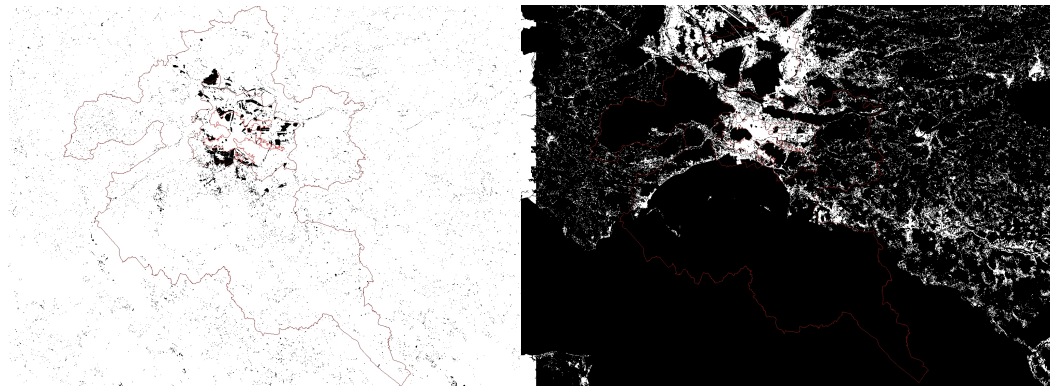


Figure 8.4: WBS (left) and HP (right) areas of Ljubljana and its surroundings.

The settlements with 100-149 inh./km^2 and 150-500 inh./km^2 did not show any readily discernable pattern, but were rather dispersed and randomly located. The only indicated pattern was that which identified dense cores – satellite dormitory settlements – which have emerged in the surroundings of Ljubljana in the past few decades. Furthermore, one would expect more peri-urban settlements in the eastern part of the municipality, since it is known for its dispersed urbanisation. However,

analysis showed that this is, when population densities are taken into account, still a predominantly rural area.

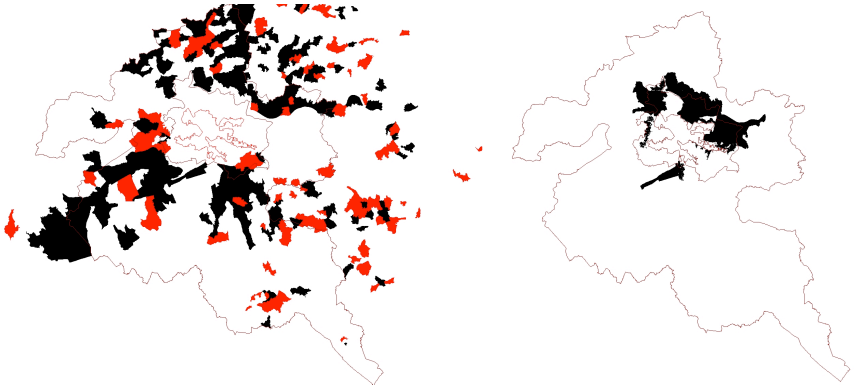


Figure 8.5: Ljubljana: Settlements with densities 100-149 inh./km^2 (red) and 150-500 inh./km^2 (black) (left), and formal designation of the peri-urban area as stated in the new development plan (right).

In the final, overlaid, image (Figure 8.6.), the city's core is clearly segregated and, accordingly, the boundary between the urban area and urban fringe[82] is easily definable. The urban fringe's outer edge is, on the north side, defined by the individual settlements placed within larger, open spaces. On the south side, it is less definable due to the marshland. This 'area of cultural landscape, preserved as historical parks' thus extends from Ljubljana, out into the region. On the basis of this analysis, it can be argued that the peri-urban area of Ljubljana cannot be defined on the south side of the city. However, for the purpose of further analysis, the peri-urban area was artificially set with the administrative border of the Ljubljana urban region.

[82] Urban fringe is in this thesis defined as a zone along the edges of the built-up area, which consists of a scattered pattern of lower density settlement areas, urban concentrations at transport hubs and large green open spaces. Urban periphery is defined as a zone surrounding the main built-up areas with a lower population density. This can include smaller settlements, industrial areas and other urban land uses (Piorr et al., 2011).

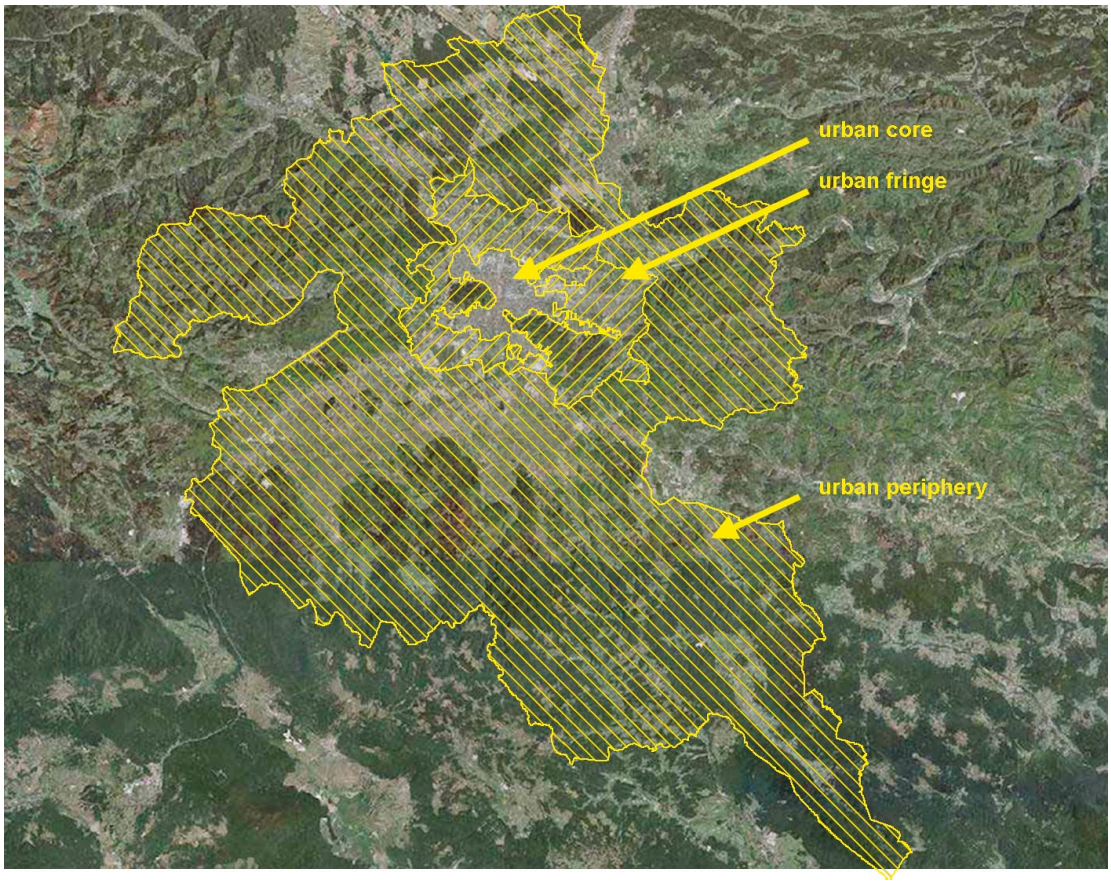


Figure 8.6: Peri-urban area of Ljubljana: An outcome of the delineation process in this thesis.

In the analysis, the urban fringe has been delineated according to the model outcome, but corrected and refined according to morphological barriers (river streams, reefs, land use borders) and built structures (roads, settlement edges). Thus it may coincide with the administrative border exactly for this reason (since administrative borders, too, are often laid out on the basis of natural borders). In places where the edge of the peri-urban area was close to existing administrative borders, the border of the peri-urban area was deliberately drawn according to the existing administrative border, purely for the purpose of facilitating the further analysis.

In summary, the peri-urban area of Ljubljana indicates a relatively narrow urban fringe area but a large urban periphery. The latter encompasses, rather than a poorly perceived peri-urban area, the area that people value as semi-natural and natural

areas suitable for recreation. However, at the same time, this area is also further from the city and thus, not as easily accessible, for these activities, as the urban fringe.

Edinburgh

The urban fringe of Edinburgh is, on the basis of the overlay analysis, on its inner edge, marked by the Edinburgh City Bypass. This was also a common observation of the focus groups' participants. On the SE, its edge no longer follows the bypass but extends into the city, encompassing the Braid Hills and an area on the city-side of the bypass, between Gilmerton and Musselburgh.

The urban fringe encompasses an area which roughly corresponds to the area of the Rural West Edinburgh Local Plan (RWELP).[83] In this sense, Edinburgh's urban fringe, more than the generally perceived fringe's land use for industrial sites, landfills, retail centres, patches of green space, etc., corresponds to the large area of green belt and its predominantly agricultural land use. Given that the general perception of the land use of this fringe is that it is of low value, Edinburgh's urban fringe might rather be called 'accessible countryside on the edge of the city'. However, some typical fringe uses can still be found within this area, for example, Edinburgh Airport, the Gyle shopping centre and Heriot-Watt University's campus.

Urban fringe was a term used in the Edinburgh and Lothians Structure Plan 2015 (ELSP) (CEC et al., 2000), as an area on which 400 new houses would be allocated. The urban fringe, as marked in the ELSP (see Figure 8.7), corresponds to the area which, in this thesis, covers the outer edge of urban fringe.

[83] The Rural West Edinburgh Local Plan (RWELP) covers the area to the west of the Edinburgh City Bypass, whilst the urban area and part of the green belt area are covered by the Edinburgh City Local Plan. The aim of both plans was to set out the Council's policies and actions to direct development in the city and its surroundings. Currently, the new plan – the Edinburgh Local Development Plan (LDP) is intended to replace both plans. LDP, similar to both previous plans, contains policies and proposals to guide development and land use across Edinburgh (CEC, 2013c).

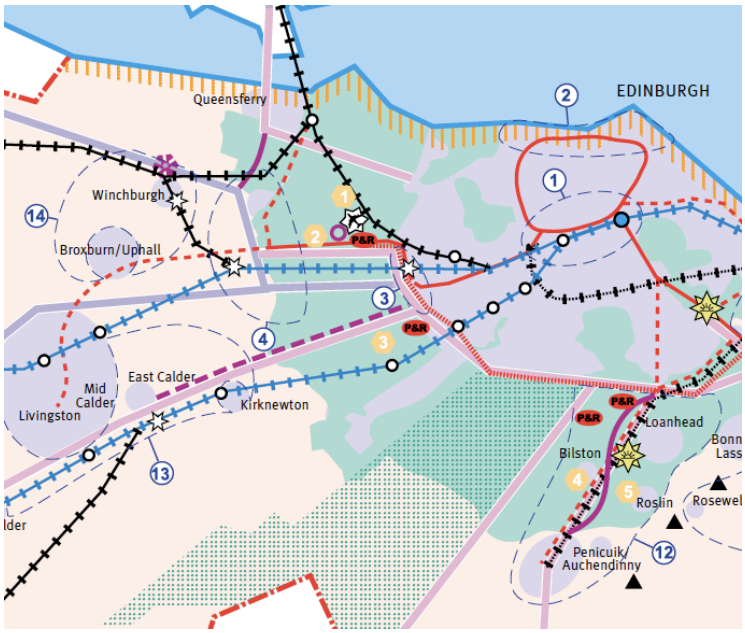


Figure 8.7: An excerpt from an ELSP diagram: Number 4 indicates Edinburgh's urban fringe area, earmarked for 400 houses (CEC et al., 2000).

The urban peripheral area on the south and SE consists of, mainly, non-built (agricultural, semi-natural, forested) land uses, e.g. the Pentland Hills Regional Park, fields and golf courses. Edinburgh's urban periphery is not continuous; two separate patches are located on the SW and NW side, but they consist of land uses similar to the main urban peripheral area.

Figure 8.8: AIA (left) and ARSA (right) areas of Edinburgh and its surroundings.

The images of areas of intensive agriculture and areas of residential-scale agriculture are almost a negative of each other: whereas areas of intensive agriculture are located outside the city, encompassing much larger spaces, as in Ljubljana, the areas of residential-scale agriculture are mainly characterised by the gardens and allotments

inside the city, suggesting the high activity of gardening in Edinburgh.[84] However, it should be noted that the backyards of flats, which have been included in this area, are generally managed as grassy areas and not used as allotments.

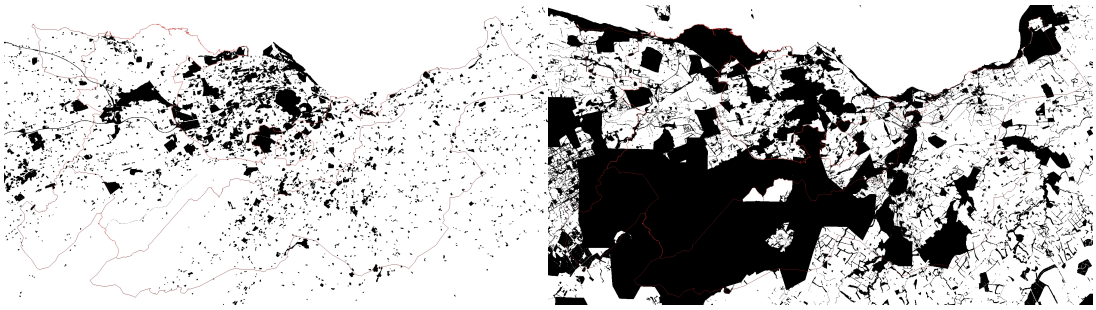


Figure 8.9: WBS (left) and HP (right) areas of Edinburgh and its surroundings.

Wasteland and brownfield sites are, similarly to Ljubljana's, scattered over the whole area, with a concentration of larger areas on the west side of the city, in the direction towards the airport. The largest proportion of the areas of cultural landscapes, conserved as historical parks, is covered by the Pentland Hills Regional Park. On the south, these areas extend into the city with the Braid Hills and its link to the city's urban parks and semi-natural areas inside the city. In this sense, they form a green wedge which connects the city core with its boundaries.

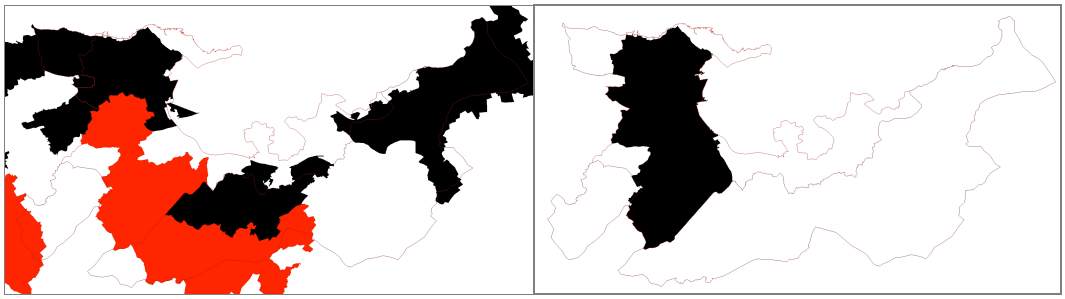


Figure 8.10: Edinburgh: Settlements with densities 100-149 inh./km^2 (red) and 150-500 inh./km^2 (black) on the left side and formal designation of the RWELP area on the right.

[84] According to Edinburgh's Allotment Strategy (CEC, 2010a), the City of Edinburgh Council manages 1233 allotment plots, spread over 21 sites across the city. Interest in gardening has risen over the last decade and thus: "A strategic approach is required to address this unprecedented demand and to ensure that the benefits of allotment gardening are properly recognised and available to all" (CEC, 2010a, p.3). The city seeks to ensure allotments are as close to people's homes as possible, and not located on the edges of the city, which is the case in Ljubljana.

The indication of peri-urban settlements, on the basis of population density for the peri-urban area (i.e. (100)150-500 inh./km^2), coincides with the RWELP and thus adds another layer to delineate the peri-urban area.

The overlay analysis of peri-urban areas, in Edinburgh's case, lacks land use information, which is an important data set but unfortunately, it was not available for this analysis due to the limitations of the data.[85] Accordingly, the final outcome of the delineation of the peri-urban area might have been different when this data set was used. Nevertheless, the final peri-urban area has shown that the urban core of Edinburgh is considerably defined, and the urban area, rather than being characterised by stereotypical peri-urban land uses, is actually, accessible countryside. It also encompasses settlements but these are, in their character, more rural and self-contained, than peri-urban satellite commuting and/or dormitory settlements, which was almost the rule in the case of Ljubljana.

Figure 8.11: Peri-urban areas of Edinburgh: An outcome of the delineation process in this thesis.

To sum up, in Edinburgh, the outcome of the overlay analysis supports the views of the interviewees, who claimed that Edinburgh does not have peri-urban areas but, on

[85] The data was restricted by copyright.

the contrary, expresses a great division between rural and urban environments. In this sense, it would be more appropriate to name the peri-urban area of Edinburgh 'accessible countryside'. In addition, the distinction between urban fringe and urban periphery might not be necessary in the first place, since the land uses of both are very similar. This, however, differentiates the two cities. Ljubljana is surrounded by many satellite settlements and the daily commuters' flow, in and out of the city, is great. The coherence of land uses is not as high as in Edinburgh, although, contrary to Edinburgh, the land uses are differentiated, to the level that urban fringe and urban periphery can be easily distinguished.

Different criteria, for both the data taken and the merging process, would certainly alter the outcome of peri-urban areas in both cases. In this thesis, the analysis was mainly based on the slight bias toward natural features, following the scope to elucidate peri-urban green spaces appropriate for recreational and leisure activities. However, additional datasets would be needed to delineate peri-urban areas more precisely and, possibly, to indicate the individual characteristic of peri-urban sub-areas.

8.2 Structural Accessibility Layer (SAL)

The SAL was used to obtain the objective accessibility levels of peri-urban green open space types and accordingly address the research question: 'How do perceptions of access by means of transport affect usage?' In this section, the results of the SAL application on both cities are presented. There are two main outcomes of the SAL: first, is the representation and evaluation of the diversity of activities which can be reached by each of the four transport modes that were considered (see Section 5.1.6, Chapter Five, for details), and the second is analysis of the accessibility clusters. Then the possibilities for more sustainable accessibility of peri-urban open spaces can be proposed.

8.2.1 Diversity of activities by the four transport modes

Ljubljana

The diversity of activities showed that, **by walking**, green spaces (class A) are highly accessible to the great majority of Ljubljana's population (89,57%) (Figure 8.12). In addition, this accessibility is also high quantitatively, in the sense that access to all eleven types of green space is feasible. Only people that live on the edge of the city have access to less of the green space types that were considered. This is because green space types, such as children's playground and urban parks, are located in the urban areas only and thus, are not accessible to people living in a peri-urban area, by walking. People who live in the eastern part of the municipality, a predominantly hilly rural area, have access to the least number of green space types. They have access to types such as 'large size open space areas' and 'protected areas' but, similarly to people that live on the city's edges, not to more urban green space types. This information suggests that the local authorities may need to consider greater provision of 'urban' or more managed green spaces, respectively, on the boundary of the city.

Ljubljana	**Analysis by area** (% of 275,6085 km^2)				**Analysis by population** (% of 280.140 inhabitants)			
	NMw	NMc	PT	CAR	NMw	NMc	PT	CAR
A (High accessibility: 0,9-1) DivAct = 1	14,77% (8,49%)	3,23% (0,0%)	14,02% (11,67%)	10,45% (9,36%)	89,57% (58,11%)	33,73% (0,0%)	73,94% (67,2%)	80,62% (69,89%)
B (Medium accessibility: 0,5-0,9)	5,49%	9,94%	0,88%	6,1%	9,13%	52,69%	0,88%	11,42%
C (Low accessibility: 0-0,5) DivAct = 0	1,51% (0,0%)	8,6% (0,47%)	6,87% (6,67%)	5,22% (0,32%)	1,28% (0,02%)	13,58% (3,97%)	25,16% (24,82%)	7,96% (3,94%)
NU*	78,23%	78,23%	78,23%	78,23%	0,0%	0,0%	0,0%	0,0%
NU encompasses 21.586 sub-areas out of the total of 27.560 sub-areas. (NUs are based on the following criteria: no population and no access to road infrastructure (in cases when the centroid of a cell was more than 200m away from the nearest road (Silva, 2008)).								

Table 8.1: Ljubljana – Three accessibility classes for four considered transport modes, by area and by population.

People who live in the city centre, on the other hand, have all eleven green space types within walking distance of their homes, which is a very significant fact since it shows the great potential for sustainable accessibility to open spaces. Furthermore, only 1,28% of the whole population of the municipality has a low level of accessibility (class C), and 0,02% of the population has no access (DivAct = 0) to green spaces. The following map (Figure 8.12) indicates the spatial representation of the accessibility levels by walking.

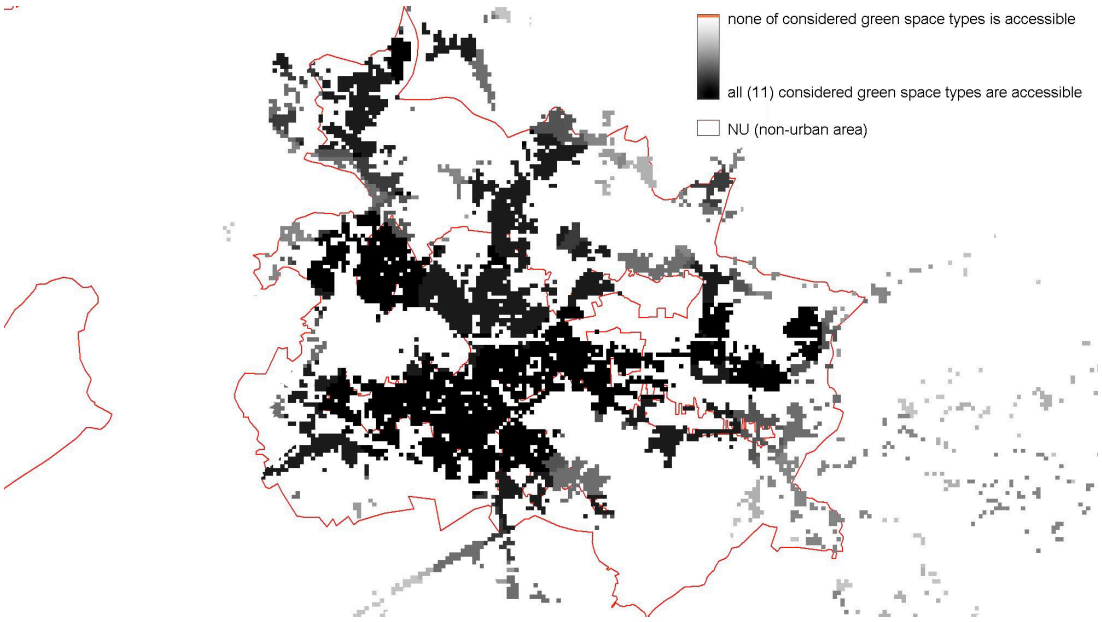


Figure 8.12: Ljubljana – Diversity of activities accessible by walking (NMw).

Accessibility **by cycling** (Figure 8.13) is considerably lower than accessibility by walking. Only one third of the population (33,73%) has high accessibility to green spaces (class A), whilst the largest percentage of the population (52,69%) has medium accessibility (class B). In addition, 4% of the population has no accessibility to green spaces by cycling (DivAct = 0). These sub-areas are coloured orange on the map: they mostly correspond to the areas on the edge of the city and settlements scattered in the surroundings of Ljubljana. Also, some parts of the city-centre area have access to only two or three green spaces of the type under consideration. The areas of different accessibility levels are located randomly in the area, which indicates the poor connectivity of cycle paths in some areas and recent improvements made in order to connect cycle lanes, in others. The authorities' strategy to improve

the cycle paths is to lay, resurface or connect cycle paths in an area of the city to a very high standard, but at the same time, the continuity of cycle paths from one part of the city to the other is poor, which can be seen clearly from the map. Interestingly, similar to accessibility by walking, accessibility by cycling also appears to be the lowest on the edges of the city. This indicates that a substantive number of green space types, more rural in nature (e.g. protected areas, large semi-natural areas, etc.), is distributed evenly or in a way that is accessible from all parts of the city, also from the city centre. On the other hand, the cycling accessibility map also shows the lack of urban green spaces on the edges of the city.

Unfortunately, due to the restrictions of the data available, it was only possible to assess non-motorised accessibility on the basis of the populated sub-areas. The map, therefore, does not show how accessible the whole area is when the urban structure is not considered, and what the potential is of accessibility to places further out of the city.

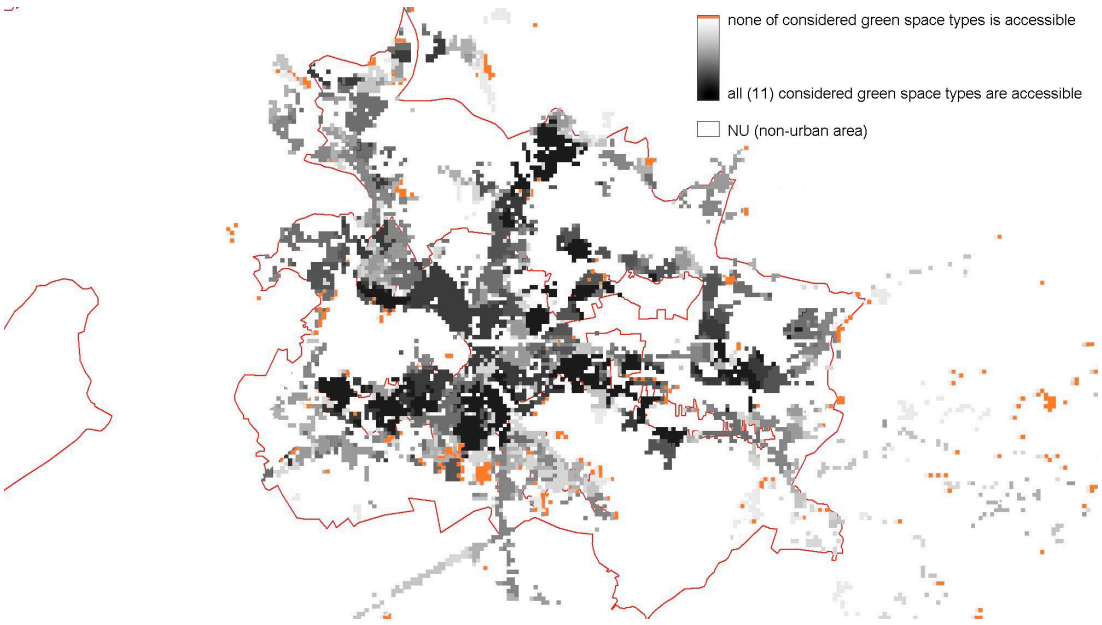


Figure 8.13: Ljubljana – Diversity of activities accessible by cycling (NMc).

The map representing accessibility **by public transport** (Figure 8.14) clearly indicates the spatial layout of the public transport (bus) infrastructure. In other words, the sub-areas in close proximity to a bus service had the highest accessibility

to green spaces (DivAct = 1), whilst the subareas with no access to a bus service had no accessibility (DivAct = 0). Areas with no accessibility take in one quarter of Ljubljana's population, which is a significantly high percentage and thus a worrying fact. Similar to non-motorised modes, accessibility was highest in the city centre, which makes sense, since practically all bus routes are connected to the city-centre area. Sub-areas with no accessibility are located on all the city edges, suggesting poor diversification of the public transport network. However, these results must be interpreted with caution because of possible errors (due to incomplete data sets) in the analysis procedure. Individual sub-areas should be manually examined in order to determine their real-life accessibility.

The outcome of the diversity of activity index by public transport shows that, in a cut-off value, which was chosen by people themselves,[86] practically all the green space types considered are accessible. In other words, there is great access to the final destination (i.e. a specific green space type), but access to nearby bus stop for starting a journey by public transport is not available for 25,16% of the population. Moreover, these sub-areas (with zero accessibility) are located in less densely populated parts of the city. In such a way, bus operators discriminate between highly populated areas and those that are less dense, which is reasonable, but not socially inclusive.

[86] The cut-off value was determined by the questionnaire results on the time people were willing to spend travelling to individual green space type. See Section 5.1.6 and Section 6.1.3 for details.

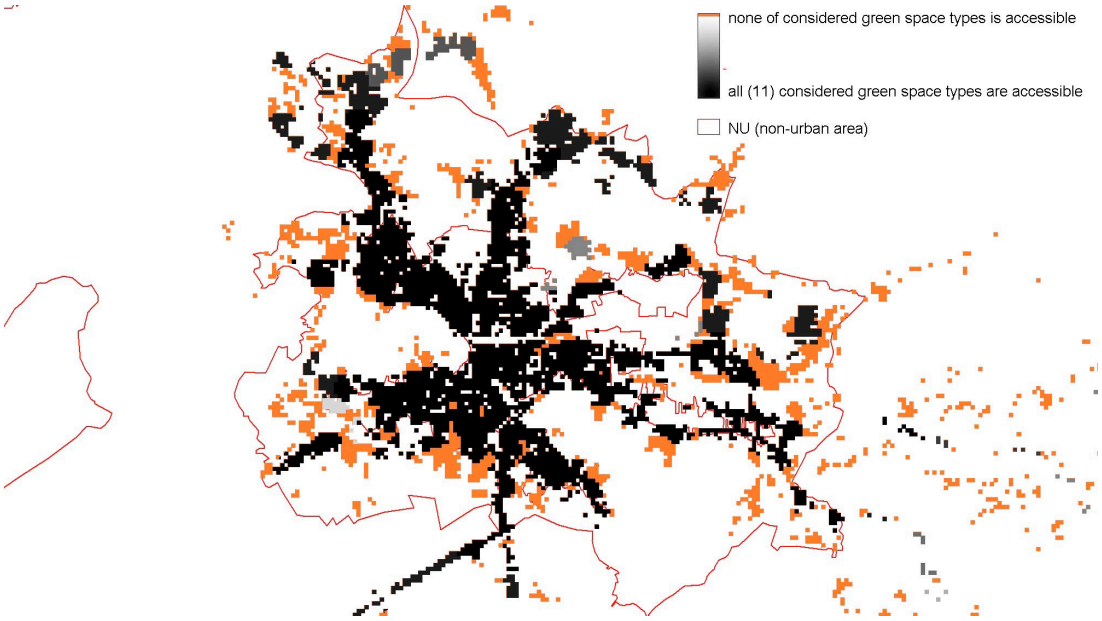


Figure 8.14: Ljubljana – Diversity of activities accessible by public transport (PT).

The graphical representation of access to green space **by car** (Figure 8.15) did not show accessibility as high as had been expected, therefore, manual analysis of the accessibility levels in the southern parts of the city, which on the map appear to have low accessibility, was carried out in order to double check the validity of the result. The manual analysis has shown the highest accessibility, as is shown in Figure 8.15. The error in the initial analysis may be explained by the incomplete data sets, which happened because the software that was used for the analysis (Network Analysis Layer extension of ArcGIS) was unable to connect individual roads, therefore, the figure of 8% of the population with low accessibility (class C) to green spaces by car (as calculated in the initial analysis) must be taken with caution, as it may be higher in a real-life situation.

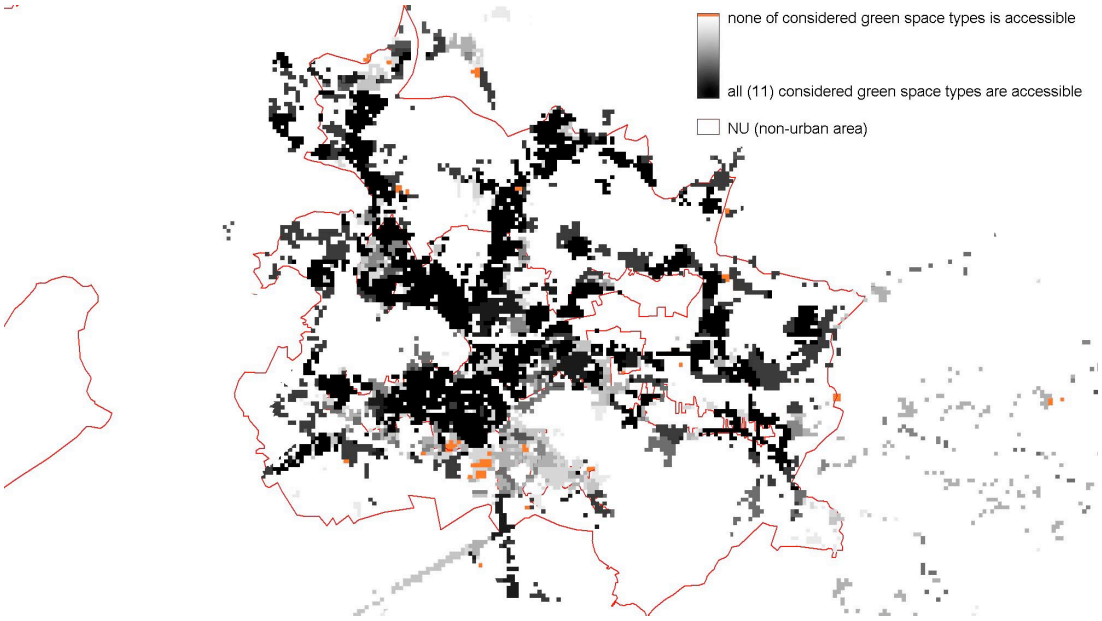


Figure 8.15: Ljubljana – Diversity of activities accessible by car (CAR).

The diversity of activities' index was a basis for calculation of a **sustainability index**, which is represented by the accessibility classes (of combinations of four considered modes of transport to 11 different peri-urban green space types) in Table 8.2. In Ljubljana, all nine possible classes[87] were present and all classes were also considerably evenly distributed in the area (excluding non-urban areas). Nevertheless, most areas corresponded to cluster III (favourable conditions for the use of all modes). In addition, those were the areas where the largest proportion of Ljubljana's population lived (more than 50%). This indicates the great potential of land use and transport conditions to provide sustainable travel (i.e. using a means of transport other than a car).

LJUBLJANA				
Clusters	Area (km^2)	Area (%)	Population	Population (%)
I. (NM)	2,9	1,1	9.939	3,5
II. (NM & PT)	1,3	0,5	6.418	2,3
III. (all modes)	19,9	7,2	155.754	55,6
IV. (NM & CAR)	4,3	1,6	22.102	7,9

[87] See Section 4.3.2.2 for an overview of the classes.

V. (PT)	3	1,1	11.278	4,0
VI. (PT & CAR)	7,7	2,8	37.119	13,2
VII. (CAR)	3,3	1,2	10.888	3,9
VIII. (medium accessibility)	13,1	4,8	25.484	9,1
IX. (low accessibility)	1,7	0,6	1.332	0,5
NU	218,4	79,1	/	0,0
Total	275,6	100	280.314	100

Table 8.2: Ljubljana – Accessibility clusters, by area and by population.

Areas in cluster VII (favourable conditions for the use of a car only) were located only on the edges of the city (Figure 8.16) and applied to only 3,9% of the population, suggesting that more sustainable travel could be pursued in most of Ljubljana's municipality. In addition, its whole city-centre area corresponded to favourable conditions for all means of transport. Hence, for land use and transport conditions, more sustainable travel behaviour can be pursued, but human factors play a decisive role in this (e.g. the comfort of using a car, etc.)

The sub-areas which extended further out of the city were beyond the scope of using either public transport or a car (cluster VI). Moreover, sub-areas in the southern parts of the city and those extending into the Marsh, fall into cluster V, which is favourable for public transport only. In these areas, the local authorities ought to revise the bus service and possibly, extend some of the routes in cluster VI, in order to minimise car use. In addition, sub-areas with medium and low accessibility levels should be improved to meet sustainability standards, since, at this point, the use of any considered transport means would improve their accessibility.

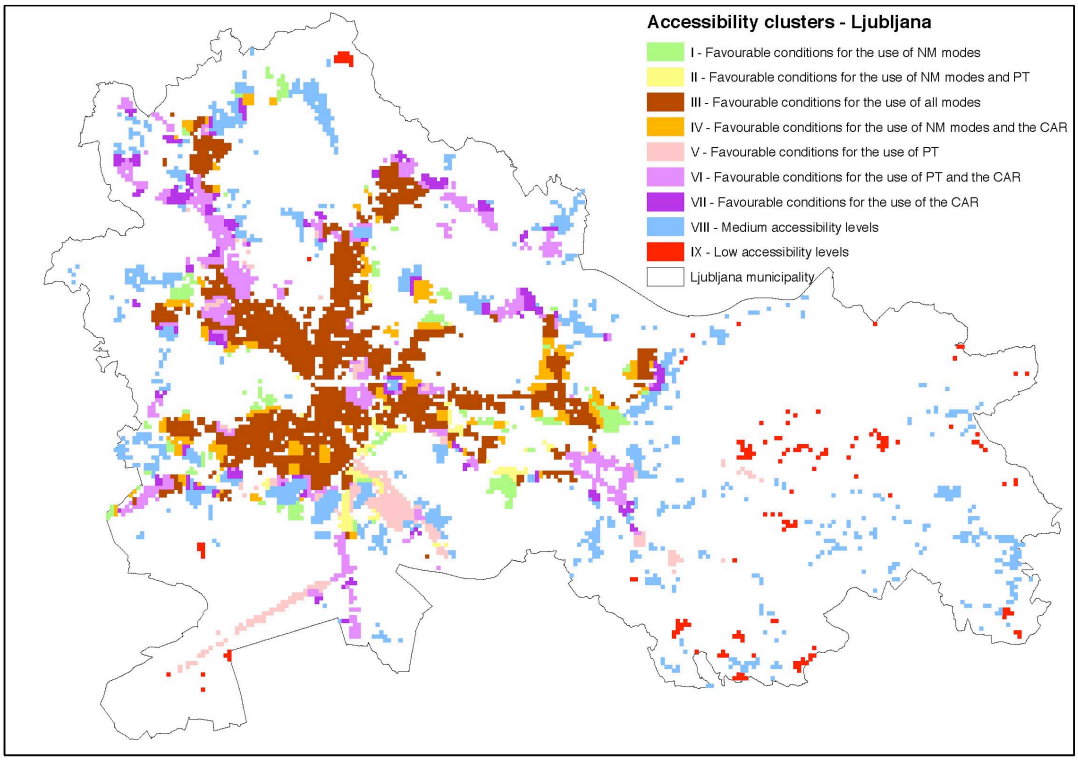


Figure 8.16: Ljubljana – Accessibility clusters.

To sum up, Ljubljana's city-centre area provides good conditions for all means of transport. Accordingly, in order to meet sustainability aims, non-motorised means of transport and/or public transportation should be promoted. However, the medium to low accessibility of peri-urban sub-areas is rather worrying as it indicates that people who live in these areas, have a dissatisfactory level of accessibility to green spaces.

Hence, two actions may be proposed: in Ljubljana's urban areas, travel behaviour needs to be addressed and the use of non-motorised means of transport should be promoted. In peri-urban areas, accessibility as a whole needs to be improved, possibly by extending bus routes and promoting non-motorised accessibility, rather than improving the infrastructure for the use of the car.

Edinburgh

The diversity of activities **by walking** revealed that, surprisingly, only about half the population has high accessibility to the green space types (class A) under consideration, whilst a big percentage (38,19%) has medium accessibility (class B)

(Table 8.3). The reason for such an outcome was inaccessibility, by walking, to green space types 'countryside settlements and their surroundings', 'large size open space areas on the edge of the city' and 'protected areas'. On the other hand, only 5,6% of the population has low accessibility (class C). However, similar to Ljubljana's case, a large proportion of areas with no accessibility (DivAct = 0) appeared due to the incomplete dataset relevant to road infrastructure. It should be considered that real-life accessibility is higher than indicated in Figure 8.17 which presents the outcome of the computer-based calculation.

Edinburgh	**Analysis by area** (% of 263,56 km^2)				**Analysis by population** (% of 448.774 inhabitants)			
	NMw	NMc	PT	CAR	NMw	NMc	PT**	CAR
A (High accessibility: 0,9 – 1) DivAct = 1	18,86% (0,42%)	35,67% (32,84%)	8,04% (0,0%)	37,3% (36,4%)	55,4% (0,89%)	92,68% (88,94%)	9,31% (0,0%)	89,14% (88,36%)
B (Medium accessibility: 0,5 – 0,9)	17,98%	0,33%	9,87%	1,18%	38,19%	0,48%	11,96%	3,97%
C (Low accessibility: 0 – 0,5) DivAct = 0	6,5% (5,0%)	7,25% (5,84%)	25,34% (25,34%)	4,94% (3,26%)	5,6% (3,59%)	6,03% (4,07%)	77,91% (77,91%)	6,08% (3,57%)
NU*	56,75%	56,75%	56,75%	56,75%	0,81%	0,81%	0,81%	0,81%
*NU encompasses 28 sub-areas with 3656 inhabitants. Due to the low level of population density, these areas were considered as less relevant. ** Considering time travel according to cut-off value proposed.								

Table 8.3: Edinburgh – Three accessibility classes for four considered transport modes, by area and by population.

Leaving to one side the areas with no accessibility (marked in orange on Figure 8.17), access to green spaces by walking is high in the northern parts of the city but lower on the south and SE side. Interestingly, different to Ljubljana, no highly accessible urban core could be identified. On the contrary, the medium and high accessible areas are relatively evenly distributed through the whole city. This indicates Edinburgh's compact city structure and balanced distribution of open spaces.

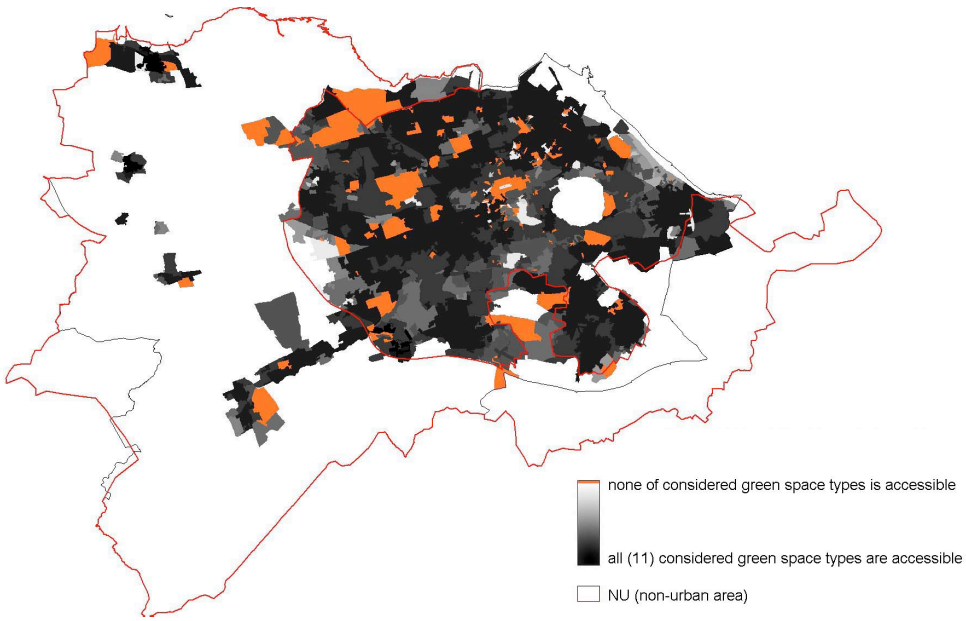


Figure 8.17: Edinburgh – Diversity of activities accessible by walking (NMw).

Accessibility **by cycling** (Figure 8.18) is higher than accessibility by walking. More than 92% of the population live in sub-areas with high accessibility (class A). Whereas medium accessibility is almost non-existent, low accessibility accounts for 6,03% of the population. Again, sub-areas with no accessibility (DivAct = 0) should not be considered because of the error in analysis. Higher accessibility by cycling than by walking can be explained by the cut-off value used to calculate accessibility levels for both means of transport. Cycling enables people to go longer distances, in the same time, than by walking, therefore more types of green spaces can be reached. As the criteria for cycling, only the cut-off value was considered whilst in real life, other factors such as slope, surface type, weather conditions, type of cycle roads, may be crucial for enabling/disabling cycling conditions.

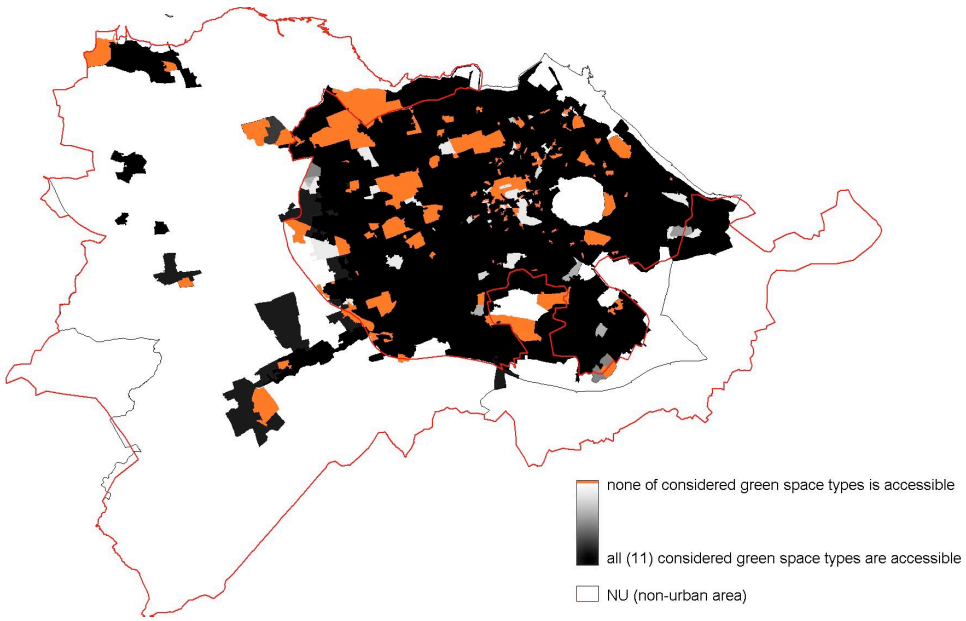


Figure 8.18: Edinburgh – Diversity of activities accessible by cycling (NMc).

Two analyses using different criteria were performed for the accessibility **by public transport**. Firstly, the accessibility by bus was done without using any cut-off value, as presented in Figure 8.19. From the map it can be seen that, with the exception of the northern part of the city, the whole of Edinburgh has the highest accessibility by bus, to the green space types under consideration. It should be noted that only the Lothian Buses' company's network was calculated, due to data restrictions. Lothian Buses does not operate to South Queensferry and this explains the non-accessible sub-areas in the western edge of the city (orange marked area on the top left corner in Figure 8.18).

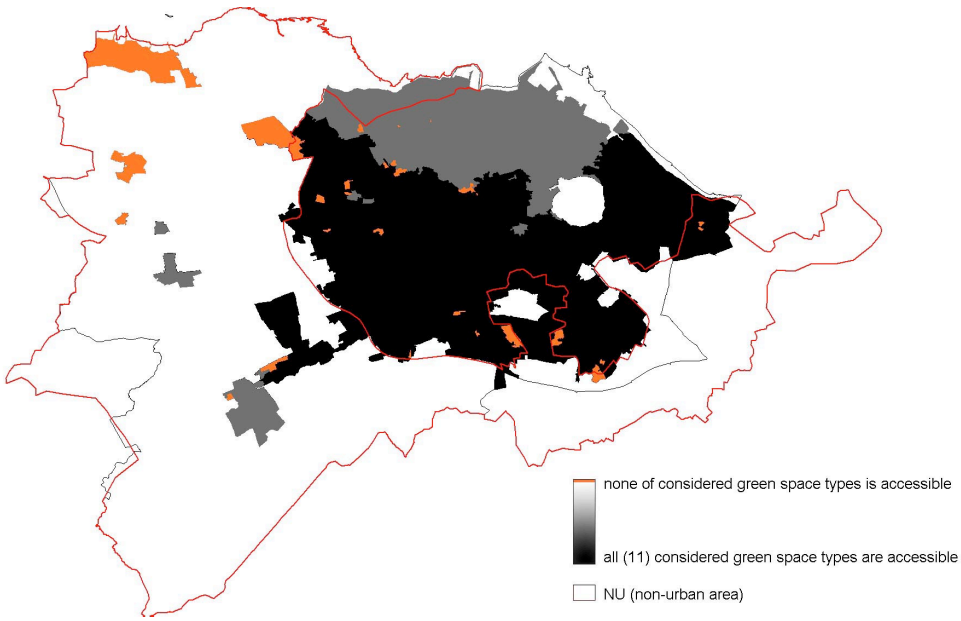


Figure 8.19: Edinburgh – Diversity of activities accessible by buses (PT), with no cut-off value.

However, when the cut-off value is considered, in terms of the time that people would be prepared to travel to green spaces,[88] accessibility by bus appears to be significantly lower, as is presented in Figure 8.20. Moreover, almost 80% of the population in this case, have no access to any green space. This indicates the particular urban structure of Edinburgh, which does not, contrary to Ljubljana, allow the concentration of population density along roads or public transport routes, respectively. On the basis of both maps, it can be concluded that the bus network is significantly well connected but the speed of buses should be improved, in order to enable and promote travelling to green spaces by bus.

[88] See Table 5.7 on the details on the cut-off values considered.

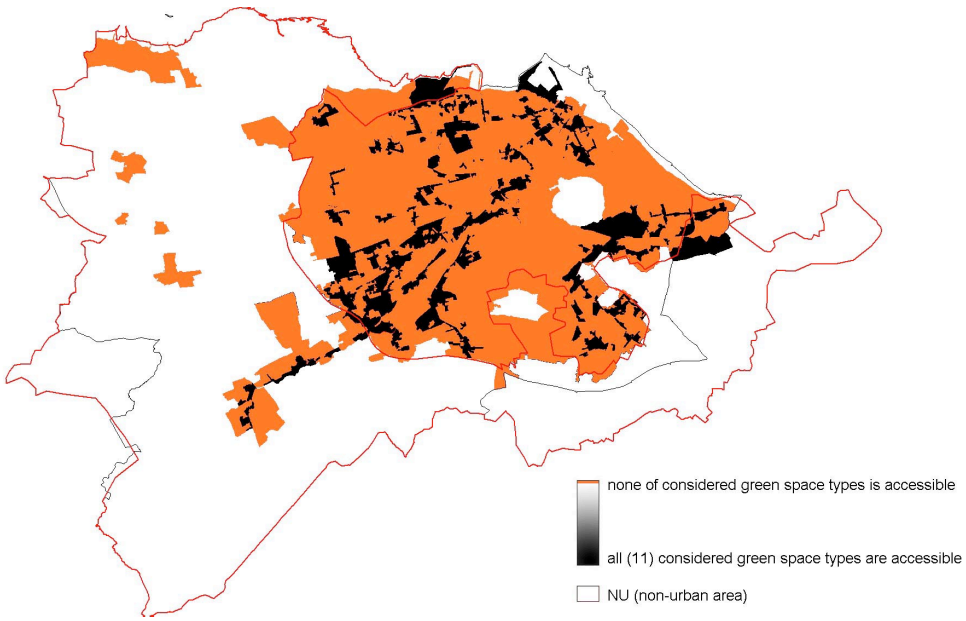


Figure 8.20: Edinburgh – Diversity of activities accessible by buses (PT) where the cut-off value is considered.

Figure 8.21 presents the accessibility levels **by car**. Almost 90% of Edinburgh's population have great accessibility to green spaces by car. The non-accessible areas (DivAct = 0) are potentially due to analysis errors; individual sub-areas would need to be revised in further consideration of accessibility levels.

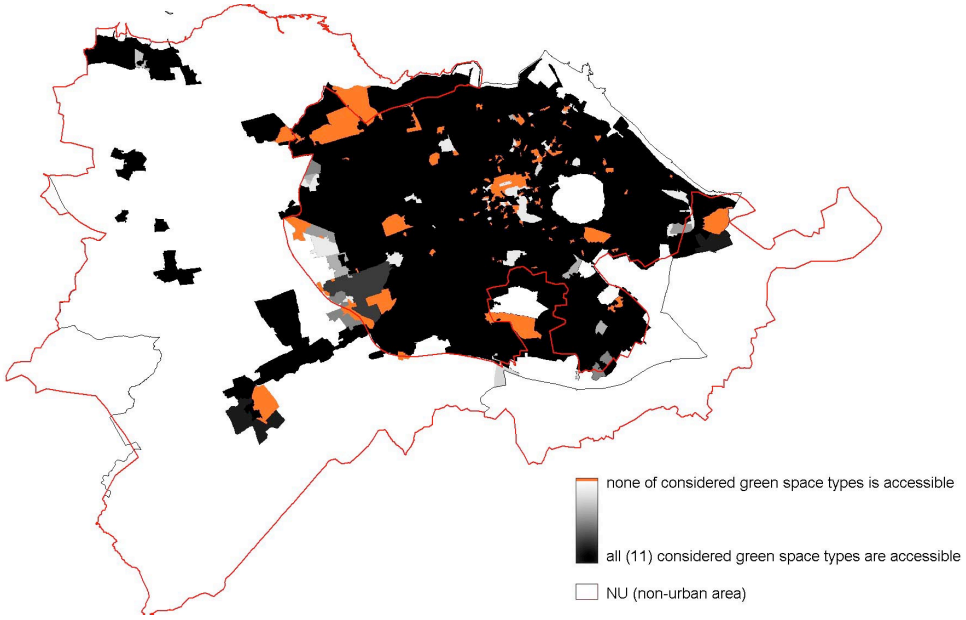


Figure 8.21: Edinburgh – Diversity of activities accessible by car (CAR).

The calculation of accessibility clusters for Edinburgh was carried out with regard to public transport on the basis of the cut-off value. The results are listed in Table 8.4, below.

EDINBURGH				
Clusters	Area (km^2)	Area (%)	Population	Population (%)
I. (NM)	0,4	0,2	3.197	0,7
II. (NM & PT)	1,5	0,6	9.088	2,1
III. (all modes)	35,5	13,5	126.262	28,1
IV. (NM & CAR)	33,2	12,6	177.126	39,5
V. (PT)	4,5	1,7	15.887	3,5
VI. (PT & CAR)	19,3	7,2	41.374	9,2
VII. (CAR)	16,6	6,3	57.621	12,8
VIII. (medium accessibility)	2,1	0,8	12.789	2,8
IX. (low accessibility)	0,2	0,1	1.717	0,4
NU	150,0	57	3.876	0,9
Total	263,1	100	448.774	100

Table 8.4: Edinburgh – Accessibility clusters, by area and by population.

Similar to Ljubljana, in Edinburgh also, the largest area fell into accessibility cluster III, which offers favourable conditions for all modes of transport. However, when the population is taken into account, this cluster does not encounter the largest segment of the population. Most of Edinburgh's population lives in areas which have favourable conditions for the use of non-motorised means of transport and a car (cluster IV). Favourable conditions for the use of a car (cluster VII) are scattered around the city and thus do not form any pattern for easy interpretation. However, they tend to accumulate on the NW side of the city and on the east, close to the sea.

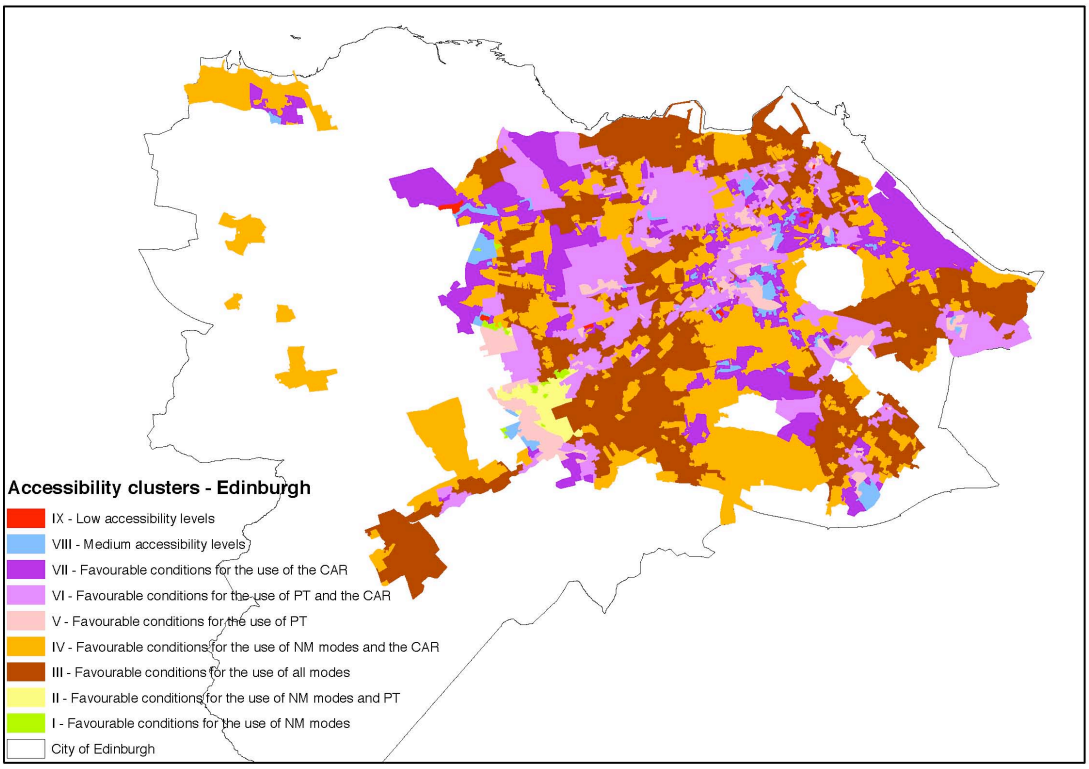


Figure 8.22: Edinburgh – Accessibility clusters (when considering accessibility by bus with the cut-off value).

The second map of Edinburgh's accessibility clusters (Figure 8.23) was prepared with no restriction on the cut-off value relevant to accessibility by bus. This map clearly presents a much larger area favourable to all modes of transport. The rest of the areas are favourable to both public transport and car usage. Only one area (on the west edge of the city) favours car use only, but given the limitation in terms of bus network datasets and the knowledge that there are other bus companies that connect Edinburgh city with South Queensferry, even this area could be eliminated.

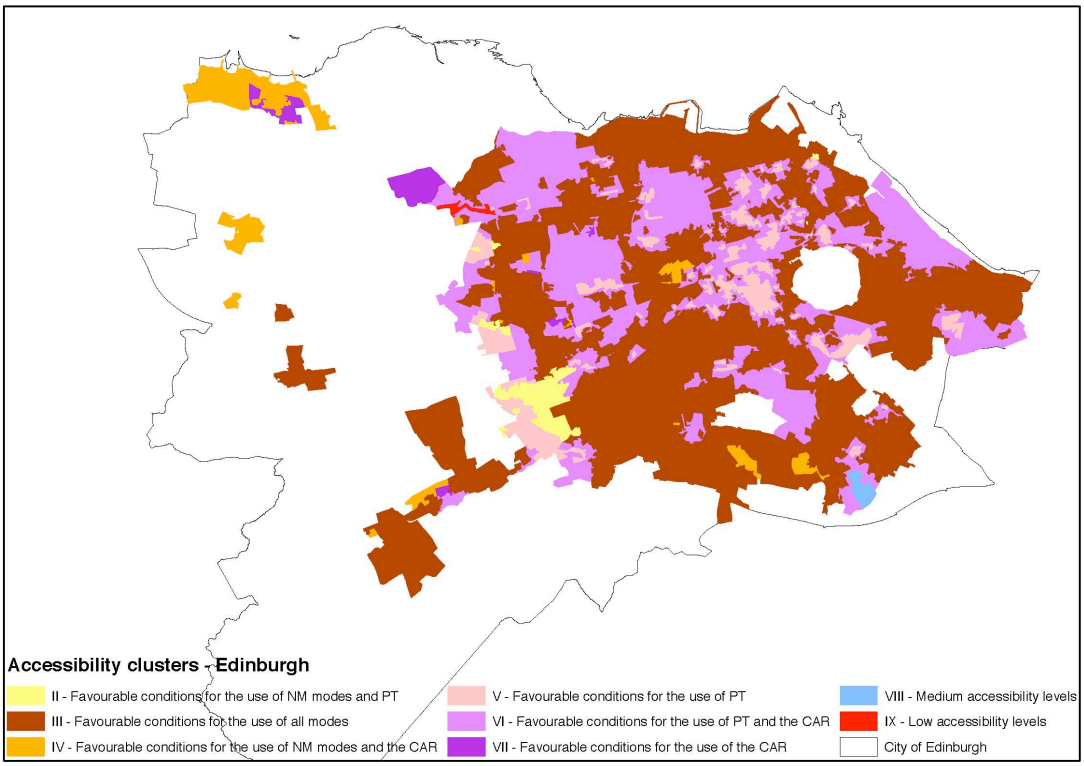


Figure 8.23: Edinburgh – Accessibility clusters (when not considering the cut-off value in calculation of bus accessibility).

To sum up, Edinburgh provides good accessibility by bicycle, although some criteria (e.g. current weather conditions, slope, type of surface), not included in this analysis, may present a constraint for the use of this mode. Furthermore, the city allows good accessibility by walking but not to all green space types. Those more rural in character (e.g. semi-natural green spaces, protected areas), which are located outside of the city, are for this reason not accessible by walking, and other means of transport need to be considered. The two analyses of bus accessibility showed that there is a good bus network, but the speed of the buses does not enable access to green spaces when time is limited. All in all, looking at the city-centre areas, the land use and transport conditions enable accessibility to green spaces by using more sustainable means of transport than the car. However, on this point, an individual's travel behaviour preferences are also an issue.

Chapter 9: Discussion and conclusion

This chapter draws together the findings from the three previous chapters and triangulates them in order to best answer the research sub-questions posited in Chapter One and the main research question which is: How can the knowledge of inner-city dwellers' perceptions and uses of peri-urban green spaces contribute to more effective management strategies for this space? It also provides a commentary on how the methods worked together and whether the anticipated results were achieved. The chapter concludes with an evaluation of the results, and the policy and planning implications, based on this research's key conclusions, and the directions for future research.

9.1 Discussion

The multi-method approach, used in the two case studies concerned with the study of peri-urban areas in Ljubljana and Edinburgh, reinforced the findings of the individual methods and, accordingly, clarified both the social and spatial characteristics of the peri-urban landscape in both cases. This section first answers the individual sub-questions and then it addresses the theoretical considerations, with the intention, then, to develop some general, cross-case conclusions. The detailed strategy for addressing all the sub-questions can be found in Appendix B.

9.1.1 Question One: What type of peri-urban landscape are inner-city dwellers attracted to for their leisure activities?

This question was primarily investigated via the questionnaire, focus groups, interviews and land use analysis. The findings from all the methods that were implemented have revealed some interesting and unexpected preferences for specific green space types. The utilisation of taking a multiple-case study approach has proved to be useful in order to differentiate between the common and age/case-specific preferences and patterns of use.

9.1.1.1 Activities in which inner-city dwellers engaged

The questionnaire results showed that younger people (18-29 years old) in Ljubljana would mainly go to peri-urban green spaces for active recreation, such as running, hiking or cycling. Their Edinburgh peers, however, sought exactly the opposite experience in peri-urban green spaces: relaxation, peace and wildlife observation. Going to peri-urban green spaces, for them, represented their getaway from civilisation or, in other words, an escape to nature. For physical activities, they preferred to use large urban parks, as a conversation with them in the focus groups demonstrated.

The reason for these differences is, on the basis of the land use analysis, because of the respective city structures of Ljubljana and Edinburgh, rather than because of cultural differences. Ljubljana's star-like structure enables quick access to extensive green spaces (i.e. green wedges), which span from the city-centre to its edges. Accordingly, city-centre dwellers can use extensive green spaces on a daily basis. This situation can be confirmed by another activity which highlighted the differences between the two cities, namely, dog walking. In the questionnaire, the Ljubljana participants reported that this activity was a recurrent one since it is an activity undertaken on a daily basis and therefore, it usually takes place in a location close to an individual's home.[89] As one focus group participant said, he usually takes his dog to Rožnik because it is near to his home and it is a large space and as such, is very convenient. Rožnik was, in fact, in the questionnaire, indicated as the peri-urban green space visited most frequently. This green space is one of two hilly green wedges and is one of the Ljubljana's most used green spaces, which was acknowledged also by the interviewees. In addition, there are not many large parks in the city-centre of Ljubljana which can provide enough space for some forms of active recreation.[90] Edinburgh, on the other hand, offers city-centre dwellers large parks which are appropriate for activities like running or playing football. The

[89] Questionnaire respondents from Ljubljana were more likely to go to peri-urban green spaces for dog walking than Edinburgh's respondents. However, Ljubljana's peri-urban green spaces were accessible quicker than Edinburgh's ones which enabled the respondents to visit them on frequent basis. This may be the reason that 'dog walking' was recurrently reported activity in Ljubljana's case.

[90] Of the 28 parks in Ljubljana, Tivoli Park is the largest, at 17 hectares, whilst the rest are significantly smaller (about 1 ha or less), while in Edinburgh, the Meadows measures approx. 37 ha and Princes Street Gardens 15,5 ha.

Edinburgh focus group participants did, for example, mention the Meadows and Arthur's Seat as very convenient for meeting friends, having a barbecue there, running, and playing some sports games. All these findings corroborate with the findings of Coombes et al. (2010), who found a correlation between the proximity of green space and physical activity.

The activities pursued by the working-age groups (30-59 years old) in Ljubljana and Edinburgh were more alike. The types of activities these groups were interested in were mostly family related, for example, family outings, playing with children, learning about nature, and having a picnic or barbecue. Also, the activities of the older groups (60+ years old) were similar for the two cities: they were most fond of walking. Walking enabled them to get some fresh air, observe wildlife, search for forest fruits and mushrooms, and in general, enjoy being in nature. In Ljubljana, they also went cycling for recreation whilst in Edinburgh, except for walking, no other activity was reported.

People visited peri-urban green spaces for some other activities and these pertained mostly to personal reasons, for example, going there to take photographs, to visit some places free of cars/dogs, to go fishing, to build small structures out of found material, etc. Interestingly, these less common activities were mentioned in the questionnaire rather than in the focus groups, which suggests that people are more comfortable expressing their views about particular activities when it is possible for them to remain anonymous. In the focus groups, conversely, the participants reported more or less the same activities. However, this may also be because the questionnaire respondents had no time limitation and thus, were able to think longer about all the activities they undertake when they go to peri-urban green spaces.

9.1.1.2 Types of places the people visited and the reasons for their choices

This research has recognised a correlation between the type of green space and activity pursued there. In other words, people made a decision as to which green space to visit, according to the activity that they wanted to undertake. This finding, however, does not advocate the multi-functionality of green spaces but it points to

the value of having different kinds of green spaces for different activities. A large urban park, the Meadows, in Edinburgh, was the only outstanding green space type in which a variety of activities was pursued. This park enabled people to enjoy a series of activities, for example: walking, cycling, relaxing, playing sports games, having a barbecue/picnic, meeting friends, playing with children, etc. The capacity of large parks to cater for multi-functional use has been recognised in some previous research (Goličnik, 2005) and, it can be argued, is exemplified in the case of the Meadows, with its nearby environment which facilitates regular usage (the vicinity of schools, universities, shops and residential areas), sufficient facilities (bins, benches, toilets, children's play areas) and regular maintenance. Peri-urban green spaces, being less maintained and thus more 'wild', in turn, offer different kinds of experiences, which is also important, even if the variety of activities undertaken there is less.

Indeed, the questionnaire revealed that large parks, followed by small local parks, are the most visited green spaces in both cities. In Edinburgh, green corridors ranked in third place. In Ljubljana, these were in fourth place, and in third, large green spaces on the edge of the city (i.e. hills, fields, open semi-natural areas, etc.) The explanation for the high ranking for green wedges has been argued already in the previous section. However, such a high ranking for green corridors, in both cities, was a rather surprising result. The discussions in the focus groups reinforced people's strong preference for this type of green space. The main reason for its high use was walking, which was the activity most pursued by all age groups, in both cities. Green corridors appeared to be a suitable asset where one can enjoy being outdoors, on a managed path and yet, removed from the traffic and city's noise. When the green corridors also had a river, they were valued even more highly.

Interestingly, in Edinburgh's case, discussions about specific green spaces in and around the city revealed the beach (Portobello, in particular) as another highly ranked green or, better, blue space. This was a case-specific finding, since Ljubljana is not located near the sea. It should be mentioned that Portobello beach was not recognised as much used green space by the interviewees, although some of them

referred to it as a space whose potential the city had not yet fully realised. The presence of water, however, recurs in the literature and is recognised as a highly valued environmental attribute (Kaplan and Kaplan, 1989; Luttik, 2000). In addition, some of Ljubljana's focus group participants referred to the lack of green spaces, in or around the city, where they could go to swim or just to be near the water, for its relaxing and calming effects.

The use of sports fields appeared to be case-specific, too: only young people in Ljubljana were using them, whilst their peers in Edinburgh, for similar activities, used large urban parks. The use of cemeteries and churchyards pertained mostly to the older groups, in both cities. However, the characteristics of the use of cemeteries were case-specific, and pertain to the different layout of these spaces. In Ljubljana, traditional cemeteries are highly maintained, which allows people to spend their free time there in taking care of their family grave (i.e. arranging flowers, cleaning the stone, etc.) In a way, they are a substitute for a garden for those who do not own one. In Edinburgh, conversely, the older group regretted the absence of social gatherings in cemeteries, which was an activity much pursued in the past, but not done today. It is worth noting that this activity was a novelty for the researcher; the focus group participants excitedly reported local cemeteries and graveyards as being places where, in their youth, the local community would gather and have picnics or a tea there. Furthermore, for them too, gardening was the preferred activity, pursued either on their own or in a communal garden. In any case, this age group, in both cities, used green spaces in similar ways: the peri-urban green spaces (hills, fields, waterways) were mostly used for walking and hiking, by those who were physically still fit enough to pursue such activities. The older people (aged 80+) were mainly preoccupied with gardening or going for a short walk in a nearby park. In the focus groups, they remarked that they would like to visit places that are more natural-like, but their physical health has restrained them from using these spaces.

All in all, the triangulation of methods showed that people, across the cases and age groups, all preferred semi-natural green spaces, such as woodlands, fields, waterways, etc., and green corridors, especially for relaxation and to getaway from

their busy lives. A useful question, to gather this information, was to ask the participants to describe their ideal green space. Only then, the difference between green spaces visited in reality, and participants' wishes, was revealed. The importance of natural environments has been stressed in the literature (Neuvonen et al., 2007; Swanwick, 2009; Tyrväinen et al., 2007) as being an asset which significantly contributes to people's mental health. Hence, these kinds of environments serve people more for restorative reasons than for physically active recreation, which is usually pursued in urban parks or indoor and outdoor sport facilities.

9.1.1.3 Frequency of visits

Although all the age groups preferred natural environments, away from built structures, this preference did not influence their frequency of visits to these places. Most of the people, in both cases, visited peri-urban green spaces sometimes, but a detailed analysis revealed that the frequency of visits was rather low.

Interestingly, the interviewees' knowledge (of both authorities and professionals in landscape architecture and urban planning) of the frequency of green space use, both urban and peri-urban, was different for the two cities. In Edinburgh, the interviewees from the authorities claimed that people mostly use urban parks, whilst peri-urban green spaces are used much less. The only peri-urban green spaces that they mentioned were the Pentland Hills, Cramond, and the outer parts of the Water of Leith and the Union Canal. This was in accordance with the questionnaire and focus groups' results. Portobello beach was the only destination that almost none of the interviewees mentioned, which proved to be a well used asset, as has been discussed already in the previous section.

In Ljubljana, on the other hand, the assumptions of the interviewees, with regard to frequency of use, varied immensely from the findings based on the two methods conducted with (potential) users (see Figure 9.1). Since there is no recent statistic for the use of green space in and around Ljubljana, the interviewees mainly speculated about the frequency of use on the basis of, as they admitted, their own experience of

living in the city and using green spaces, and with the knowledge of the results of some surveys carried out for some other purposes, respectively. However, when the results of the interviewees' markings of green spaces, and real-life use were compared, as recorded through the questionnaire results and the focus groups, people actually use green spaces much less than the interviewees thought (especially those interviewees from the authorities). Specifically, people seem to use one and the same green space and not use the others at all. This imbalance in the use of green spaces in and around the city might lead to the overuse of some, which was a point stressed also by some of the interviewees, and the complete neglect of other spaces. For example, more than 30% of the questionnaire respondents chose Rožnik and Šišenski hrib as their most frequently used green space. On the other hand, the Sava river area was used less than 1%. The majority of the interviewees, however, marked it as being among frequently used areas. All in all, these results should be taken with caution, since this research only pertained to city-centre dwellers and did not take into account other potential users of green spaces (especially people who live close to these areas).

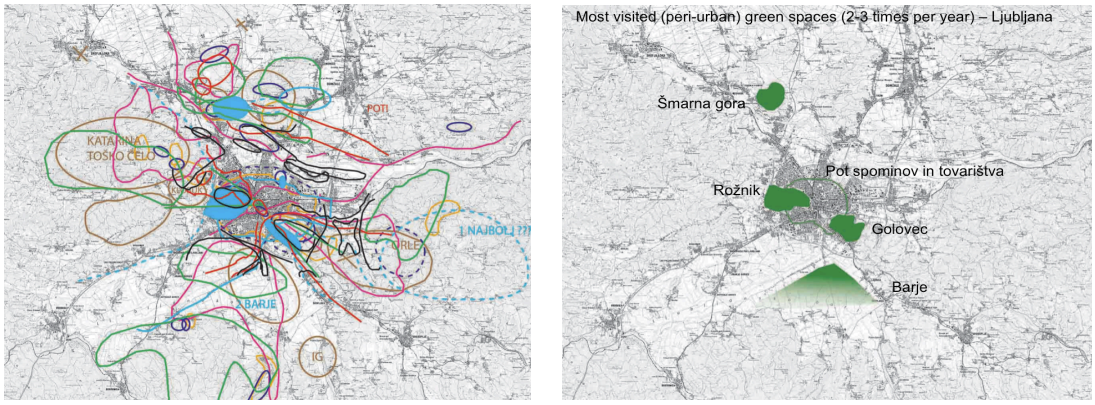


Figure 9.1: The peri-urban green spaces visited most frequently, according to the questionnaire results (left), and the interviewees' indication of the most visited urban and peri-urban green spaces (right), in Ljubljana.

In both cities, of the three age groups, the working-age group tended to visit these spaces the most. Their pattern of use differed from the other two groups, in the sense that their visit would be 'a day out in a nature'. They would plan their trip to a green space and spend a longer time there, and usually, at the weekend. This finding

confirms the compensation theory (Schipperijn et al., 2010), which argues for the correlation of distance to green space and the length of stay there (see Chapter Three for a detailed discussion).

With regard to the other two age groups, there were two initial assumptions about this: first, that younger and older people tend to visit less than working-age people and, second, that this is due to the constraints they experience in terms of access, namely, the distance to these spaces is barely manageable on foot, nor sometimes even by bicycle, and thus getting there requires the use of another means of transport, for example, a car or going by bus. Some previous research on the subject of countryside and out-of-town recreation (Natural England, 2006; Jaarsma et al., 2009) has shown that trips to peri-urban green spaces are largely made by car. Since the two age groups are less likely to have access to a car, the speculation of this research was that this might be the primary barrier to them not visiting. However, detailed analysis of the questionnaire and focus groups confirmed the first assumption and rejected the second. To explain further, although the two age groups were less likely to own a car,[91] the accessibility-related constraints appeared to be just one of all the variables which affected their frequency of use. Moreover, as the regression analysis revealed, the lack of accessibility was not a predictor, in either city, for the use of peri-urban green space; the only predictor of peri-urban green space use was an individual having a good knowledge of a place. This may be linked with the discussion above, which suggests that people used a few places which they know well, or at least that are familiar to them. Kaplan and Kaplan (1989) have argued that mystery is both an attraction and danger of a green space. To some extent, this research's focus groups' findings confirmed this duality, since some of the focus groups' participants, especially the younger ones, mentioned their wish to explore some other, new places, but, until now, they have not done so. Obviously, the wish is there, but the need still has to grow.

[91] The exception was, in the questionnaire results, the older group in Ljubljana, 70% of whom owned a car. However, the majority of the focus groups' participants did not own a car or, alternatively, they owned one but they used it rarely.

9.1.1.4 Constraints on the use of peri-urban green spaces

The reasons for the frequent use of some places and the constraints on the use of others were clarified by the joint results of the questionnaire and focus groups' analysis. On the basis of these results, the interviewees were asked about their actions to eliminate some of the barriers, in order to achieve greater use and thus, in the long term, to benefit people's quality of life. As follows, the main obstacles to use are discussed.

Lack of time, followed by the distance to these spaces being too great, were the constraints reported the most and recurrently, by all groups, in both cities. This concurs with some research carried out previously, for example, by Grahn and Stigsdotter (2003), in their study which seeks to establish the relationship between the visits paid to urban green spaces and levels of stress, and they reported exactly these two factors being primary obstacles. This thesis argues for a close relationship between these two factors. The participants of the focus groups themselves, in this research, linked the lack of time with the distance to peri-urban green spaces. Since these spaces are not located on their doorstep, they often do not have enough time to travel to a space and to spend some time there. Instead, they choose green spaces which are located close to their homes and with which they are familiar and thus find convenient, and so they do not have to make much effort in orienting themselves in such spaces. On the occasions when they had more time, the working-age group and, to some extent, also, the older group, would go to peri-urban green spaces and spend a longer time there, than, for instance, in their local green space.

The specific constraints of the younger group, however, appeared to be more diverse. Whilst the questionnaire highlighted 'the lack of good transport links' being a significant constraint for Ljubljana's young group, and 'no one to go with' for the Edinburgh one, the in-depth focus group discussions revealed much greater complexity behind these reasons. The transport issue is of general interest to this thesis and is addressed in detail, in Section 9.1.4. With regard to 'having no one to go with', one possible explanation may be, again, related to Kaplan and Kaplan's factor of mystery (see the discussion in the previous section), although, this time, mystery,

or unfamiliarity, represents a barrier to making visits, which is easier to overcome in company than by oneself. However, to some extent, barriers also related to the individual personality and temperament. The focus groups' results, for example, showed that some young people are highly exploratory and curious about discovering new places, whilst others preferred to stick to their own local environment. On this point, it should be noted too that the age of the focus groups' younger participants ranged from 19 to 30 years old. This is a relatively wide span; narrower age ranges might have shown more consistency in participants' frequency of, preferences for and barriers to use.

Safety was another barrier that differentiated patterns of use for the two cities. It was reported by the older female focus groups' participants from Edinburgh only. Interestingly, in the questionnaire results, this issue did not appear as relevant for this age group. The contrasting responses to this issue, obtained by a combination of these two methods, have been reported also by Ward Thompson et al. (2005), who, in their research, explored the characteristics of woodland use in several Scottish communities. In this thesis, safety issues in the focus groups pertained to the fact that peri-urban green spaces are generally less populated than, for example, urban parks. As such, people are more open to physical assault, since there may not be enough people around who could prevent this happening. Safety was also mentioned in relation to accidents, which may happen to lone walkers. None of these issues was stressed in the questionnaire. Ward Thompson et al. (2005) suggested the nature of the methods of data collection used as a possible reason for different responses. Indeed, the focus groups' discussions in this research have emphasised the importance of interaction among participants. Whilst the safety issues were brought up only by some of the women participants, others were very surprised by these concerns since they felt quite safe and relaxed when visiting peri-urban green spaces. As was revealed in the later discussion, none of the participants actually had any negative experience related to safety. Conversely, their concerns were of a more psychological nature, for example, on the basis of the stories they have heard from acquaintances. Still, psychological barriers are also important since they are part of people's behaviour and constraints for not visiting. However, in accordance with the

suggestion made by Ward Thompson et al. (2005), the basis for these fears, and their actual influence on the frequency of visits, would need more research. In addition, potentially, there are also other factors with regard to safety levels at a green space, which relate to specific destinations.

The final difference between the two cities was 'not feeling the need to visit'. In the questionnaire, twice as many respondents identified this reason (i.e. 26%) in Ljubljana compared with Edinburgh. Surprisingly, the findings of the focus groups were the opposite: Edinburgh participants, especially the younger ones, who (almost) never visited peri-urban spaces, clearly expressed the view that the main reason is that there are plenty of green spaces closer by and these are large enough and so, they do not feel the need to go further out of the city. Further analysis of the questionnaire, which aimed to find a correlation between this variable and any other (Table G.17 in Appendix G), revealed that people who do not feel the need to use peri-urban green space simply do not care for, or about, it, either. This was a rather surprising correlation since the assumption made prior to this analysis was that these respondents used different green spaces, perhaps the ones located closer to their homes, or private ones, like a private garden. Another assumption was that these respondents fulfil their need for green spaces and being outdoors in their second home and its surroundings, since, in Ljubljana, nearly 50% of respondents had one. However, the analysis showed no relation between these variables. Interestingly, some previous research (Grahn and Stigsdotter, 2003; Maat and de Vries, 2006; Schipperijn et al., 2010) has provided similar findings. Arguably, having a garden or some sort of private green space, and visiting public green spaces, is positively correlated, but different green space types do not compensate for each other.

Since younger people made up the majority of respondents who did not feel the need to visit, this may be explained by the fact that they had an interest in some other activities, for example, Pergams and Zaradic (2006), in their study, reported a decline in visits made to the national park due to higher use of computers for video games, the internet, and watching movies. However, in this thesis's questionnaire, another option, 'I am not interested in going there', would better explain this reason.

Accordingly, further exploration of the background reasons for this constraint is needed.

9.1.2 Question Two: What are people's preferences with regard to the peri-urban landscape?

Prior to looking into people's preferences with regard to peri-urban green space types, their views had to be considered in a wider framework, i.e. what does a peri-urban area, as such, actually refer to, since, as discussed in Chapter Three, this is a question which, until now, has not achieved a consensus in the wider planning and academic field. Finding out what 'peri-urban areas' means to people allowed this researcher to gain a better understanding of urbanity, rurality and the peri-urbanity of the specific case-related green spaces which came up in the discussions.

9.1.2.1 Perceptions of peri-urban areas

In terms of summarising the findings of all the methods, the general conception of peri-urban areas varied on several levels, first, among people themselves, second, between people and professionals and, third, among professionals, depending on their background.

People's perceptions, of peri-urban areas, to a degree, supported previous research findings, which claimed that these spaces are perceived as fuzzy, ambiguous, unorderly, etc. (see Chapter Three for a detailed discussion). When defining inner borders of peri-urban areas, the focus group participants in both cities largely depended on some obvious and artificial barriers such as roads, especially bypasses. However, people's description of the *character* of peri-urban areas varied greatly between Ljubljana and Edinburgh.

In the opinion of the Ljubljana participants, these spaces were a mix of different land uses, indefinable, and dirty. As such, their description matched the characterisation of these spaces in the literature, for example, Shoard (2002) depicts city edge areas as 'vast', 'scruffy' and 'unplanned'. Similar descriptions are provided also by Qviström and Saltzman (2006): 'non-places', 'trivial', 'transitory', and Gallent at al.

(2006): ‘urban shadow’, ‘transitional’, ‘blurring’, etc. Furthermore, the characteristic land uses that all authors assigned to peri-urban areas matched with the focus groups’ participants’ descriptions: shopping centres, highways, undeveloped land, dumpsites and wastelands, fly-tipping areas and such. Shoard (2002, p.78) argues: “The characteristic appearance of the interfacial landscape is matched by the characteristic forms of land-use which it reflects.” This points to the fact that the fringe or peri-urban land uses are common and characteristic for *any* peri-urban area, regardless of their local or national context.

The participants and interviewees in Ljubljana had, in relation to Edinburgh, more difficulties in spatially gauging the peri-urban and urban fringe areas respectively. Whilst they certainly acknowledged the existence of such spaces around the city, and were able to distinguish between the core city area and its fringe areas, the distinction between peri-urban and rural was more difficult, in some places even impossible, to define. The same was experienced by the researcher when using an overlay analysis as a method to define peri-urban and urban fringe areas. Sprawled development, especially on the city’s south side, blurred the divide between urban and rural and, since there is no obvious morphological structures on this side, only functional characteristics, for example, land uses, such as shopping centres or agricultural fields, may represent a reference point for a delineation.

Edinburgh, conversely, being a city with a very distinctive rural-urban divide, is perceived as such also by its dwellers. They associated Edinburgh’s peri-urban areas with some individual derelict and vacant sites or, alternatively, they mentioned large intensive agricultural areas which are part of the green belt. However, they did not perceive these areas negatively, but rather in a sense viewed them as being “accessible countryside”. In addition, interviewees’ responses matched: whilst some refused to indicate peri-urban areas, claiming that Edinburgh does not have them, others mostly referred to green belt areas, but stressed that these areas are rural in character, although they are in proximity to the city. This echoes another of Shoard’s statements (Shoard, 2002, p.75): “When we think of the land of Britain, we think of

town and village, countryside and coast." Interviewees' responses that Edinburgh has a strong rural-urban distinction refer to this exactly.

The findings from Edinburgh suggest, to a degree, that green belt areas without an intrinsic, either recreational or wildlife value, do not represent an important and interesting asset for people, in terms of using it for any kind of activities. Only one, younger, focus groups participant mentioned that she liked sometimes to go to woodland to explore nature without experiencing any restrictions and prohibitions typical of urban green spaces (for example, for barbecuing, camping, picking flowers and berries, etc.) However, the woodland that she was referring to (Blackford Hill and surroundings) is an established green open space of Edinburgh city, and not a typical ambiguous or *loose-fit* (Ward Thompson, 2002), peri-urban open space.

The aim of this research was to find out the value of *everyday/informal* peri-urban open spaces, and not only of established ones, such as regional parks, woodlands or country parks. Findings such as the one mentioned in the previous paragraph (participants' use of woodland), however, did not find that peri-urban *everyday* open spaces were particularly of value to inner-city dwellers. This was reflected through infrequent use of these places, as the questionnaire results revealed. In addition, the focus groups revealed that participants value and use established peri-urban green spaces only.

In the literature, loose peri-urban spaces are often mentioned as being attractive to teenagers since there is no adult surveillance there (Gallent et al., 2006; Shoard, 2002; Ward Thompson et al., 2005). Because this age group was not the focus of this research, the importance of these places to them, cannot be claimed. However, the value of peri-urban spaces, for teenagers, would be worth exploring more, in future research. In addition, peri-urban spaces may be valuable also to minority and/or marginalised ethnic groups such as gipsies, travellers, etc. This research did not include any minority ethnic group and the exploration of their views and opinions on the importance of peri-urban spaces present another gap to be filled in future research.

In terms of people's understanding of the general concept of peri-urban areas, it can be concluded, for both cases, that they differentiate between *great extensive landscapes* and *peri-urban landscapes*. Whilst they greatly appreciate the former and value them for being suitable for recreation and leisure activities, they attach a negative connotation to the latter. These spaces present something that "needs to be tidied up", as one focus group participant put it. This perception is in accordance with environmental psychologists' findings that humans most value the semi-natural appearance of places with a clear indication of them having been managed (Kaplan and Kaplan, 1989). In addition, such findings reflect centuries-long human effort to achieve orderly planning, which, with peri-urban areas being 'messy' and of a random pattern, obviously, they do not fit into that category.

9.1.2.2 Attitudes to peri-urban green areas

Since the value of a specific place does not relate only to its (frequent) use, but is influenced by many other factors, such as a person's previous experiences, memories, emotional attachment, etc., as numerous studies have shown (see Chapter Three for a discussion), the inner-city's sense of place was explored also, in order to clarify peri-urban green spaces' value from this angle.

A sense of place was explored using a combination of two methods: the questionnaire and conducting the focus group interviews. This combination has proven to be an excellent way, first, to uncover the existence or not of a link between the peri-urban green space visited most frequently and attitudes to this place (the questionnaire) and second, to elucidate the personal, social and other background reasons for these feelings (the focus groups).

The findings revealed that people do not necessarily value the most the places they go to most often. In both cities, the majority of the respondents were neutral in identifying, in the questionnaire, whether their most used place is their favourite one too. Nevertheless, nearly 40% favoured their most visited place very much or entirely; in Edinburgh, this figure was a slight percentage point higher than in Ljubljana. However, at the same time, almost half of Ljubljana's respondents thought

there are better places to be than at this place. These, and some other answers, highlighted the differences between the two cities in terms of place identity and place dependence.

Whilst in Ljubljana, the respondents, to a great degree, identified themselves with the peri-urban green space they visited most often, they were not dependent on it very much; they would not miss it when they were away and it did not provide enough satisfaction in terms of the things they liked to do most. Interestingly, the statement, 'I care about the future of this place', split the respondents in to those who cared very much and those who did not care at all. The questionnaire results revealed the following respondents' sense of place characteristics: weak rootedness, knowledge of the space and, connected with this, a feeling of free and confident movement in it, and appreciation of a place's landscape features, such as forests, fields and water. However, on the other hand, there were some disturbing elements of this place, which could relate to the social aspects of the place, as some results have shown. One way to interpret this variety of results would be that the majority of the respondents are not indigenous to Ljubljana (weak rootedness; nearly 50% of the respondents did not spend their childhood there) but they have been living there for a while (more than two years, but the majority, up to 10 years) and they planned to stay there also in the future. They use green spaces around the city (good (self-claimed) knowledge of the place), appreciate their natural features and, perhaps, for this reason, they identify themselves with these green spaces. However, their childhood, spent someplace else, might evoke (embellished) memories of some other place which was fulfilling their needs much more, which may explain their low place dependence. In addition, focus group participants who had a homestead somewhere other than in Ljubljana, confidently assured that the homestead was their favourite place to be. Furthermore, approximately half of the respondents in Ljubljana chose Rožnik in Šišenski hrib as the green space they visited most often. Its popularity, which often reflects its overuse, might explain the dislike of the social environment of this place, when there are too many people, one cannot get peace and find relaxation, which were the activities most sought by the respondents. However, since scarce information on the respondents' past was collected, this interpretation remains

an assumption. More of this type of data would need to be collected to make these statements more assuredly.

In Edinburgh, place identity and place dependence were, as the factor analysis revealed, merged in to a holistic sense of place feeling. Respondents, too, appreciated the appearance of the place and felt that they could move freely in it. Furthermore, they also did not feel rooted at all, and they did not value it for its social environment. However, they cared significantly more for the future of the place, although they were less certain about staying in the city in the future. Another significant difference was that they did not know this place very well. This could be interpreted by the fact that the majority of the respondents were relatively new to the city (more than 80% did not spend their childhood there and almost 20% have been living in their current residence for less than 3 months) and for this reason, they were curious about, and keen to explore new places. The most visited peri-urban green space perhaps evokes in them memories of places they used to go to and accordingly, they were able to identify themselves with it. At the same time, they have not yet built up many expectations of it, and thus, did not differentiate between place identity and place dependence.

9.1.2.3 Social contact

An argument that can be posited, on the basis of the questionnaire's findings from both cities, is that people, in peri-urban environments, sought predominantly a place of peace and relaxation, away from their busy lives, noise, and people too. However, further discussion with the focus groups' participants confirmed that was only partly the reason.

Although in both cities, people liked to go to visit in company, for example, with their friends or family, there were some significant differences. In Ljubljana, people would go alone if there was no one to go with. Furthermore, a high percentage of people would also go with a dog. One possible explanation for this could be that in Ljubljana, contrary to Edinburgh, dogs must be on a leash in any urban green space, except in dog parks (currently there are only two in Ljubljana). Accordingly, the only

places where dogs can be loose are large, open spaces around the city. This could possibly be a reason for dog owners' higher use of peri-urban green spaces.

In Edinburgh, people would not go at all if they had no company for a visit. As already discussed earlier, reasons for this varied according to the age groups: safety issues, in the case of older women, and no interest and lack of curiosity, in the case of younger people. Interestingly, whilst the questionnaire respondents did not like their most visited peri-urban green space for its social environment, the older focus groups' participants expressed an appreciation of seeing people there and on the way to it. They perceived them as friendlier than on the city streets since, as one participant said, everyone says 'hello' to you. The importance of places, for them, for social interaction, does not relate only to peri-urban spaces. Since older people may often be lonely, public spaces present a place where they can get in contact with other people. Whilst younger people would most likely stay in their own company when visiting, the older ones had no barriers to establishing contact with people that they had just met. In addition, this research pertained to inner-city dwellers and, as numerous studies have shown, social interaction is essential for people who live in cities (Gehl, 1987; Ward Thompson, 2002).

9.1.2.4 Space management

People's attitude to peri-urban spaces has been reflected also in their opinions of the current and future management and appearance of their most used place, as they were asked in the questionnaire. In general, in both cases, they strongly appreciated the naturalness of these places and they also wished them to remain as such in the future. As mentioned earlier, they preferred spaces that were reasonably managed and equipped with basic facilities (paths, bins and benches). Moreover, they would, in general, not use those spaces that had no paths in case they got lost, or if the ground was hard, it made these spaces difficult to access, or made moving in them difficult (e.g. woodlands with deep undergrowth or meadows with high grass).

Interestingly (though not surprisingly), people that did not visit peri-urban green spaces at all and claimed no interest in them, as their main reason, were the only

respondents who agreed that these places could be used for future development. Among the focus groups' participants, there was no one with such an opinion. Obviously, people who did not care for peri-urban areas would not participate in focus groups' discussion; however, it would be interesting to obtain more knowledge of their patterns (if there are any) of green space use.

9.1.3 Question Three: What site features are people attracted to?

A clear connection between people's preferences for spatial attributes and their activity patterns has been recognised. However, the naturalness of a place underlined people's decision about their place selection for any activity, as exemplified by their choice of either hills for hiking or open landscape for cycling.

Specific landscape attributes recorded by the questionnaire and focus group analysis, were, in both cities: the presence of water, trees, or in general, greenery, appreciation of seeing wildlife, especially birds, and, to some extent, also a preference for sloping rather than flat land. However, these attributes have been already recognised by numerous researchers as being favoured by people, generally (Kaplan and Kaplan, 1989).

The only surprising fact, in terms of the characteristics that the green space had to offer, was the immense appreciation of a distant view, which was significant in the Edinburgh case. This was only recognised through focus groups' discussions, since the questionnaire did not ask specifically about this aspect. In Edinburgh, participants from both the younger and older groups recurrently mentioned their fascination with the views that they could enjoy from some of the hilltops. The explanation for this was given by the participants themselves: being able to see in to the distance filled them with a feeling of freedom or escape from the dense city in which they lived in their day-to-day life. Accordingly, the structure of the city may be one possible explanation for such a significantly higher appreciation of views, in Edinburgh. In terms of population and built-up structures, Edinburgh is denser than Ljubljana, and, in addition, it is larger and in general, recognised as a very compact city. However, inspection of the land uses of both cities and the balance of open and

built spaces that Edinburgh has to offer within the city, are much larger open spaces than in Ljubljana. These, however, may still not be large enough to allow people to experience the vastness and emptiness of Scottish landscapes, and going up high may be the only way to achieve a feeling similar to that of standing in remote wilderness in the middle of the Scottish Highlands, for example. This interpretation might be too broad and would need more research in order to make firm statements, but it is worth mentioning that having a great appreciation of a view was emphasised specifically by the Scottish focus groups' participants and thus, some cultural differences can be assumed. Several studies have shown that cultural background is a predictor in relation to people's preferences for views (Lange and Schaeffer, 2001; Misgav, 2000), for example, Lange and Schaeffer (2001) reported Israeli visitors' preference for a hotel room overlooking forest instead of the generally more preferred distant view of a lake. However, Nasar and Terzano (2010) allow other characteristics to be influential, for example, people's living environment and age, and not necessarily just their cultural background.

In terms of facilities, in both cities, people were, in general, satisfied with the present situation. They appreciated when a place had some basic facilities, for example, comfort points, bins and benches. They all criticised the dumping of waste and fly-tipping and felt it was the duty of the council to ensure greater cleanliness of the site. The only specific asset that was missed, particularly by the younger group in Edinburgh, was a lack of information; more than having signage on the site, they would like to have information as to where green spaces are located and how to get there. Making an effort to obtain this information was one of the main reasons that put them off visiting peri-urban green spaces.

9.1.4 Question Four: How do perceptions of access by means of transport affect usage?

Among the barriers to people's use of green spaces, recorded through the questionnaire and focus groups, half of them gave various personal reasons. These, in terms of planning, designing and managing peri-urban spaces, cannot be

influenced directly. More importantly, in both cities, more than 30% pertained to transportation-related issues.

The results from the application of four primary methods to investigate this research question, i.e. questionnaire, focus groups, Structural Accessibility Layer (SAL) and land use analysis, suggest that the choice of a particular transport means is not as relevant as expected in relation to the frequency of use of peri-urban green spaces. More than accessibility being enabled only by certain means of transport, (in)accessibility as a whole, by any means of transport, was shown to be the key issue. However, in the course of the research, several other variables were revealed that influence the frequency of peri-urban green space use, such as the characteristics of the path to the green space, signage on the way, visual accessibility of places, personal preferences for particular means of transport, etc. These are connected indirectly with the choice of means of transport, but nevertheless, are crucial for peri-urban green space use and thus, should be considered in future planning actions.

Figure 9.2, below, illustrates the accessibility factors which do or do not influence the use of peri-urban green spaces, as were revealed by the joint findings of the methods used in this thesis. In the following sections, the background assessment of all the method's results is discussed in more detail.

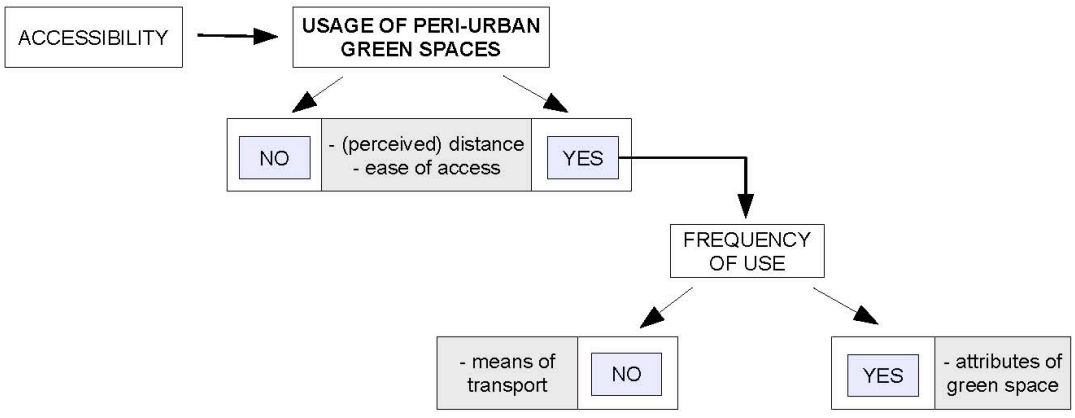


Figure 9.2: The accessibility-related factors which do or do not influence the use of peri-urban green space, on the basis of the joint research methods' findings.

9.1.4.1 Distance and ease of access

Distance or, rather, swift access, proved to be the most important accessibility-related factor in terms of whether or not people would visit a green space. Distance to the peri-urban green space was the major constraint for (more/less frequent) use. This was confirmed by both the questionnaire and focus groups' outcomes, in both case studies.

Too great a distance was associated with the amount of time people had to devote to travelling to peri-urban green spaces. As some of the focus groups' participants mentioned, nowadays, busy lifestyles just do not allow them to spend much time travelling to reach these spaces. The same was reported in both cities. However, the comparison of SAL and the questionnaire results revealed highly significant differences between perceived and actual distances, in terms of the duration of travel, and the effect of this on the use of peri-urban green spaces.

According to the SAL results, inner-city dwellers in Ljubljana had almost all considered peri-urban green space types that were within walking distance of their home (measured in the time they would, hypothetically, be prepared to travel to get there), but, as the questionnaire results have shown, their frequency of use, in real life, was more or less the same as that of the Edinburgh respondents, who, according to SAL, did not have the same opportunity. This indicates, to a degree, that inner-city dwellers perceive peri-urban green spaces as spaces that are located far away, which may discourage them initially too.

Further questionnaire results pertaining to the travel time that people found acceptable to get to individual green space types showed some cross-case similarities. For example, respondents would travel: a maximum of 12 minutes (in both cities) to small parks, 17/19 minutes (Ljubljana/Edinburgh) to large parks, and 24/30 minutes (Ljubljana/Edinburgh) to large open spaces on the boundary of the city. Interestingly, whilst Edinburgh respondents' real travel time to the peri-urban green space they visited most was, on average, 22 minutes, the mean for the Ljubljana respondents was only 17 minutes. Their frequency of visiting, however,

was, as has been mentioned already not higher than that of Edinburgh's. These results underline the importance of perceived accessibility, for frequency of use, over the real-life characteristics of the city's infrastructure and transport service. This accords with the findings of several studies which have shown that people's perceived distance to green spaces tends to be greater than the objectively measured one (see for example studies by Schipperijn et al., 2010; Sotoudehnia and Comber, 2011) and also that perceived accessibility depends on various factors, for example on the appearance of the green space, the number of facilities there, visibility, etc. (Carr et al., 1992; Scott et al., 2007). Schipperijn et al. (2010) found the perceived accessibility to be better predictor for the frequency of use than the objectively measured one, but they also observed that this fact makes it harder for city planners to allocate future land uses.

One unexpected result of the SAL analysis, in Ljubljana's case, however, was that, whilst people who lived in the city-centre areas had extremely high accessibility to all green space types, people at the city boundaries – who presumably have large green spaces on their doorstep – did not have access to urban green spaces with more defined urban functions such as urban parks and high maintained public gardens, which are valuable for different attributes and have been recognised also as an important asset for one's quality of life (Gehl, 1987; Jacobs, 1961; Madanipour, 2004). This group was not investigated in this thesis, and their needs, for specific types of open spaces, present a gap to be filled by future research.

Despite the above, **ease of access** may mitigate the (physical and consequently, also, visual) barriers to frequency of use of peri-urban green space. The importance of both ease of access, and the characteristics of the way *to* peri-urban green space, was highlighted specifically in the focus groups. On the one hand, this method allowed the participants to freely express their satisfaction with the paths to peri-urban green spaces, and on the other, it elucidated their preferences for paths' characteristics. As to the first point, safety, connectivity and the continuity of paths, with regard to any mode of travel, but in particular, with regard to cycling and walking, was mentioned. However, whilst ease of access was stressed in the focus groups as a barrier to

visiting peri-urban green spaces, the questionnaire, on the other hand, revealed respondents' considerable satisfaction with cycle routes and footpaths, in both cities, though in Ljubljana, the levels of satisfaction were slightly higher. Obviously, people were satisfied with the paths in general, however, they would wish some additional improvements to be made, in order to make their outdoor experience more enjoyable.

With regard to the characteristics of paths, the focus groups' participants showed their appreciation for environmental attributes such as greenery along the paths, dedicated paths for cyclists and pedestrians, signage, the quality of the path's surface, and the general pleasant appearance of the walkway. As they said, if they can, they would rather walk through the park than on the street. Moreover, people's strong affection for green corridors, as discussed in Section 9.1.1, additionally supports this finding and points to the green corridors as having the potential for more sustainable accessibility, which have not been used yet to a sufficient extent. Accordingly, ease of access, together with the characteristics of the way to peri-urban green space, could be a focus in future approaches to design and planning decisions in terms of which place to enable access and which transport means should be prioritised to achieve this action (Schrijnen, 2000).

Unfortunately, it was not possible to test this in the timeframe of this research if, in real life, the frequency of use of peri-urban green spaces could be improved, such that all these obstacles could be overcome. However, some findings from various studies have demonstrated the positive effect of environmental attributes of paths, with regard to their frequency of use (Ball et al., 2001; Hosseini et al., 2012; McGinn et al., 2007; Schipperijn et al., 2010). However, in all references, what was stressed was the importance of *perceived* measures of the built environment, alongside the objective ones.

9.1.4.2 Means of transport

Whilst preferences for ease of access and the characteristics of paths appeared to be cross-cultural (see the previous section), the choice of transport means varied between the cities and also ages and obviously, it was driven by a combination of

several factors, such as personal preferences, the physical setting of the particular city and cultural characteristics. For example, in Ljubljana, cycling was pursued by 70% of the questionnaire's respondents and it was also popular with the majority of the focus groups' participants, both younger and older. In Edinburgh, cycling was not an activity undertaken to the same extent: only 44% of respondents cycled, which was rather surprising since the SAL elucidated that a good cycle network exists, and this was also confirmed by the interviewees and some focus groups' participants. However, cycling was, in particular, not popular with the older generation, which may pertain to cultural differences; Edinburgh's older focus groups' participants did not even consider cycling as an option. Instead, they would walk or travel by public transport, which they valued and used frequently.

To an extent, the low level of cycling in Edinburgh can be explained by the city's morphological characteristics, e.g. 'cobbled' (sett paved) and hilly streets, and its compact structure, which enables easy access to services on foot. This was also the case in accessing green spaces: the findings of the focus groups and the SAL showed that the city offers considerable, large green spaces within walking distance of people's homes, and so there is no need to cycle. However, barriers to cycling, for those who pursued it, appeared to be the weather, lack of signage as to where cycle paths are located, and on-street cycling, which, as the younger focus groups' participants noted, can be daunting. This, again, points to the importance of perceived accessibility in terms of safety and easy access.

In Ljubljana, cycling was cross-generational and used as a means of transport in people's everyday life rather than for recreation, as the focus groups and questionnaire findings have shown. It would be taken up even more if the continuity and connectivity of cycle paths were improved. For many, cycling represented a substitute for public transport, which all considered poor, in terms of connections and bus service frequency, especially at the weekends. In line with this, older participants who did not own a car felt constrained when they wanted to access more distant green space locations. This was elucidated by the focus groups' and questionnaire's findings and points to the inequalities that exist in terms of access to peri-urban green

spaces for this age group. The younger group, however, did not felt deprived, although it should be noted that the majority of them had access to a car. More discussions, therefore, would be needed with younger people who do not have access to it, to judge (the lack of) access for them.

Furthermore, an interesting finding, revealed through statistical analysis of the questionnaires, was that in Edinburgh, use of a particular means of transport was related to a specific peri-urban green space type. For example, the majority of respondents would cycle to green corridors, but they would use a car or a bus to get to the beach. In Ljubljana, conversely, no such association was found. This may be argued by the fact that the beaches in Edinburgh are located at a distance that is too great from people's homes for cycling, and that a green corridor is an asset which accelerates the use of a bike, per se. Two additional findings confirm this argument: first, in the questionnaire, the distance to a green space was ranked second among the deciding factors for people in terms of their choice of transport. Second, the results of SAL showed that even if the accessibility levels of the green space types, by cycling, walking and public transport were significantly higher, as expected, the travel time to get there overcame the acceptable cut-off values and thus that may be the reason for the low frequency of visits.

With regard to the peri-urban green space they used the most, however, the respondents from Ljubljana and Edinburgh would use significantly different means of transport. Whilst in Ljubljana, almost 60% of the respondents walked, in Edinburgh, the modal split was more evenly distributed, but the largest group (30%) driving to the location. This finding is even more interesting given that ownership of a driving licence, car, bicycle and a bus pass was greater in Ljubljana than in Edinburgh. One way of interpreting this difference, in relation to the choice of transport, may be that peri-urban green space is closer to Ljubljana respondents' homes and hence, easier to access on foot. This was confirmed by the mean amount of time they needed to get there, which was lower than in Edinburgh's case (see the previous section for details). In addition, the travel time of Ljubljana's respondents correlated with the choice of Rožnik in Šišenski hrib as the peri-urban green space

they visited the most. The previously mentioned characteristic of Rožnik in Šišenski hrib, i.e., it being a green wedge in the city, suggests the advantage of green wedges vs. green belt, for sustainable accessibility. In spite of that, a more comprehensive assessment of both planning strategies would be needed in order to make firmer statements as to the advantages of one planning strategy over another, in terms of sustainable accessibility to green spaces. For example, people in Edinburgh indeed visited peri-urban green spaces less and they used a car to get there, but this may be due to the fact that they used urban green space on a more frequent basis, and they accessed those on foot or by bicycle. Moreover, the more equal modal split in Edinburgh mitigated the relevance of a car for peri-urban accessibility. Ljubljana's respondents, conversely, would perhaps, to access other peri-urban or rural green spaces, predominantly use a car, which was their second choice, according to the questionnaire results. In addition, as one Ljubljana focus group participant said, naturally, one will use a car to reach more distant places.

The importance of sustainability, in terms of changing habits for modal choice, was only investigated with the focus group method. The findings showed that this was not a major concern for most people, though the younger participants, in both cities, appeared to be more sensitive to this issue. The majority of older participants did not use a car anyway. Nonetheless, people's choice was more likely to be made for personal reasons, for example, comfort, for car users, a personal preference for a bike or walking because in this way, they can experience the environment differently, etc. However, among all the focus groups' participants, there were no strict car users. A notable fact, in Ljubljana's case, was that some people have changed their habits because of recently implemented traffic management actions in the city (i.e. the city-centre area is closed to cars) and they had positive feelings about that. This indicates the importance of implementing gradual and 'soft' measures, to achieve more sustainable travel, since not many people will change their travel habits without some external trigger.

9.1.4.3 Attributes of green space

Place attributes appeared to be, for people in both cities, much more relevant to frequency of use than any other transportation characteristics. Moreover, the size of a green space was the single variable which would overcome (too great) a distance to a green space. Accordingly, the size, alongside some other attributes, was the driving factor for the use of peri-urban green space since these green spaces are, by definition, not located close to inner-city dwellers' homes.

The complexity of the relationship between green space attributes and distance has been much discussed in the research to date, and no agreement has been reached, until now, as to the push and pull factors of this. For example, whilst Grahn and Stigdotter (2003) and Nielsen and Hansen (2007) found distance a clear influence on the use of green space, Schipperijn et al. (2010), on the other hand, in their study of the Danish population, stressed that distance is not a constraint (see Chapter Three for a detailed discussion of the factors that influence the use of green spaces).

Furthermore, according to Giles-Corti et al. (2005), the size is green space's *main* attribute since it underpins other attributes (e.g. trees, water features, wild life) and consequently, it encourages the use of green spaces, especially for physical activities which may not be possible in smaller open spaces, and provides a more satisfying experience for people. Nonetheless, even if smaller, the proximate green spaces are also important for their restorative effects, the same authors note.

This thesis' results showed two characteristics pertaining to the visits made to peri-urban green spaces. First, people, in principle, made casual (weekend) trips to go there. Is seems that, as one focus group respondent mentioned, going to peri-urban green spaces is nice to do for a change, rather than as a regular activity. Once there, however, people would be prepared to spend more time there than, for example, in local parks. This was specifically the case for the working-age group; the questionnaire results have shown that this group would visit peri-urban green spaces for barbecuing/picnicking, spending time with their family, and playing with children and observing the wildlife. These are all activities which, on the one hand, require

more time, but, on the other, these are not particularly active recreational pursuits. This is in line with the research of Tinsley et al. (in Giles-Corti et al., 2005), who found that families would visit more distant parks infrequently and for passive recreation.

Second, people visited specific peri-urban green space types for specific activities, which was already discussed in Section 9.1.1. However, the SAL analysis has shown some notable results in terms of the quantity of accessible green space types by the different means of transport that people consider or have available to them. In Ljubljana, not many green space types were accessible by cycling, which was due to the poor connectivity and continuity of the cycle paths. In Edinburgh, conversely, accessibility by walking seemed more of an issue, since green space types, such as countryside settlements and protected areas, were located too far out of the city to be accessible on foot. However, Edinburgh's abundance of green spaces, being large and multifunctional enough inside the city, satisfied users' needs sufficiently. As one focus group participant said, there is no need to travel out when you have a nice big park close to your house.

Nonetheless, accessibility to either a range of different green space types or spaces that are multifunctional enough to offer a good setting for many activities is, in this thesis, recognised as crucial. People's need for green spaces at different functional levels has been widely recognised and is deemed important (Grahn and Stigsdotter, 2003; Swanwick, 2009; Van Herzele and Wiedemann, 2003). Or, in Swanwick's words, "[…] most people need to access and enjoy different types of landscape at different times and for different purposes, accessing what has been called a 'portfolio of places' that is particular to each person" (Swanwick, 2009, p.S62).

9.1.5 Question Five: How do current spatial planning and transportation policies match with inner-city dwellers' wishes and preferences for peri-urban landscape use? How do the policies enable or create barriers to the accessibility of the peri-urban landscape?

The overlay analysis, interviews and the reviewed literature have pointed to local and regional levels as the most effective way to address peri-urban areas, in both cities. In accordance with this, spatial policies on these two levels have been reviewed. Furthermore, the combination of the methods showed that whilst people's preferences for landscape attributes and the experiences they sought there are cross-cultural, specific, long-established management strategies which have been shaping both cities' structures (i.e. green wedges and green belt) appeared to be the most influential in relation to enabling physical accessibility and consequently, the use of peri-urban green spaces. The main focus, in the review of the spatial policies, was, therefore, on the aspects of these management strategies.

In both cities, current spatial policies, in general, argue for sustainable development and inclusive planning (CEC, 2013a; CEC et al., 2000; MOL, 2010; LUR, 2007). With regard to green spaces on the boundaries of the city, the basic strategic development principles, set out in all the policies, in general, encompass: sustainable development, the promotion of mixed use, and fair access to the countryside. Nonetheless, some of these general aims, with regard to future planning, local spatial and management strategies, are considerably different in both cities, therefore, they have been reviewed separately, for Ljubljana and Edinburgh, and assessed on the basis of this research's findings, which considered people's needs and preferences for the use of, and accessibility to, peri-urban areas.

9.1.5.1 Ljubljana

Until a decade ago, many projects in Ljubljana were not developed on the basis of spatial development strategies but according to the needs and demands of the market economy and new public and private investors (Pichler-Milanović, 2003a). Although some individual studies and analyses have been made, the comprehensive strategic development plan for the city of Ljubljana, under the paradigm of sustainable

development, was only adopted in 2002. The main goal of the plan was the improvement of the city's competitive strengths, sustainability and quality of life until 2020 (Pichler-Milanović, 2003a).

In 2010, the city of Ljubljana adopted the new Municipal Spatial Plan (OPN), whose main aim is to allow balanced spatial development of the municipality (MOL, 2010). The plan obviously tackles the peri-urban area in a spatial sense only. Its social aspects would thus be expected to be covered in the Regional Development Programme of Ljubljana region (RRP LUR) (LUR, 2007). RRP LUR, however, addresses the region in a rather general sense. It sets out the main aims for the Ljubljana region, which are: to promote polycentric settlements, improve quality of life and economic development, taking into account the principle of sustainable development. Although it criticises the National Development Strategy (Šušteršič et al., 2005) for putting an emphasis on the economic development of the country only, RRP LUR does not address social and especially environmental aspects of a region other than in a vague sense. They are obviously still to come, only as a consequence of the economic rise of the city and region.

In fact, RRP LUR does not address the peri-urban areas of Ljubljana or any other region's settlements, either in a social or spatial sense, at any point in the document. It does, however, express a concern for sprawled development and the need to prepare the spatial development plan for the region. In this sense, transportation problems are exposed as the main issue. This was also reflected in Matej Gojčič's delineation of peri-urban areas, which pertained to the settlements only. The actions, with regard to open space, are limited in scope; the region is to "ensure a good state of the environment" and "the proximity of preserved nature and cultural heritage for all inhabitants of the region". In rural areas, leisure and recreational purposes should be "promoted" and "supported". With regard to more specific actions to achieve this, only the involvement of the collaboration of different stakeholders is mentioned.

However, in relation to accessibility of places, RRP LUR emphasises the promotion of public transport (bus and rail) and the cycling infrastructure, as opposed to

investment in the road infrastructure. The programme's objective is to achieve a regionally integrated public transport system, including the management and construction of intermodal hubs at railway stations and bus stops, the introduction of flexible forms of public transport in rural and suburban parts of the region, the construction of more efficient forms of public transport, the construction of a cycling infrastructure in the regions, etc. RRP LUR points to the rather poor current state of the cycling network: out of the anticipated 875 km of cycle routes, only 41.701 m has been implemented (LUR, 2007). All in all, RRP LUR stresses the importance of accessibility to services by other means of transport than a car, for the sake of social inclusion; the environment-related motives are not acknowledged. Nevertheless, with regard to the focus groups' findings, where some of the older participants who did not have a car felt disadvantaged as walkers/hikers, in terms of getting to some more distant places, this is an encouraging action.

OPN more specifically exposes some of the peri-urban problems such as (MOL, 2010; Pichler-Milanović, 2003b): the lack of maintenance of open green spaces; the deterioration of landscapes (the peri-urban landscape is cluttered and chaotic, compounded by car showrooms, shopping centres, businesses, gas stations and giant-sized advertising billboards, etc.); transport problems (inadequate regulation and poor accessibility, the inefficiency of public transport, disorganised parking, the unresolved problem of the railways, a disconnected cycling network); the unplanned development of garden allotments; the privatisation of open space; spreading of illegal waste dumps, etc. These are all issues that were, directly or indirectly, highlighted by the focus groups' participants. Accordingly, the needs of city dwellers have been recognised, but actions taken to meet these needs have not been fully implemented yet.

The clear acknowledgement of peri-urban areas in the Municipal Spatial Plan (MOL, 2010) is indeed encouraging. Moreover, the plan sets the basic criteria and guidelines for their urban planning. In this space, the rational use of space should be promoted with concentration of the settlement within the existing built-up area (infill, restoration), prevention of new uncontrolled construction, and mixed use. New

settlements should be linked to public transport stops. There is a need to protect the natural and cultural landscape too. OPN also tackles vacant industrial sites, grey zones and other derelict land, which all should be renovated.

Another welcome aim of the OPN, which coincides with this research's finding regarding the provision of different types of green spaces, is to "ensure different size and types of green spaces (in addition to the large ones, also smaller ones, e.g. parks, lawns, smaller agricultural areas) and the preservation and establishment of a connecting corridor (river banks, tree lines)" (MOL, 2010, p.11393). In the future, their assets, in ecological and recreational terms, are to be preserved.

In general, Ljubljana's 'star-shape' form is to be maintained and enhanced, with strengthened green wedges connecting the city-centre to its outskirts (MOL, 2010). In this sense and, when properly developed, the green wedges already present green corridors, which was a green space type much appreciated, as found in this research. OPN recognises this opportunity as the "spatial possibility of functional 'green' links for pedestrians and cyclists into the recreational hinterland of the city" (MOL, 2010, p.11402).

In detail, this pertains to the improvement of linkages (routes, recreational paths and the management and maintenance of this infrastructure), for which a comprehensive action plan, based on the so-called OPPN (local physical plan), for each of five green wedges, will need to be prepared. The importance of rivers (Sava, Ljubljanica, Gradaščica, Glinščica) and their corridors for public use is also recognised. OPN focuses on connecting green space types, from the city-centre to its outskirts, as more programmed ones (e.g. children playgrounds, urban parks) to less programmed (e.g. forest, agricultural fields, hills). However, the SAL analysis uncovered that this concept, of the uneven distribution of individual green space types, results in the inaccessibility (and lack of) of, specifically, more urban types of green spaces on the fringe of the city. To access these sorts of green spaces, one needs shorter distances, which has not been achieved in Ljubljana. In addition, OPN does not specify the minimum distance required, from city dwellers' homes, to certain (or any) kind of

green space. It only specifies the amount of green space required per square metre of living space; however, this, in practice, often results in low quality lawn that is of little use, thus, the appropriate measures to tackle this should be considered.

With regard to accessibility to the peri-urban landscape, the priority is to be given to public transport, cycling and walking. More specific measures, in relation to public transportation, are, for example, to establish direct bus routes and integrate city buses in to the region (which goes along with RRP LUR aims). Most importantly, access to public open spaces is directly addressed: "The creation of high-quality, technologically advanced public transport, which will be directly connected with the network of public open spaces" (MOL, 2010, p.11400). With regard to cycling, the following has to be achieved: continuity, directness, attractiveness, safety and comfort. The lack of all these characteristics was aired by the focus groups' participants; whilst the lack of safety along country roads was mentioned only by the older group, all groups stressed the lack of continuity, attractiveness and comfort. Interestingly, OPN focuses first on the cycling infrastructure, whilst footpaths are given much less attention. This points, to an extent, to the high popularity of cycling in the capital and its surroundings.

Recreation on agricultural and forested land is also stressed in terms of the public trespassing on these areas and the need to find assurance of no conflicts of interest. However, no specific measures as to how this will be achieved are listed in the plan. This may stem from the common perception of public entitlement to free access, to both public and private land. Also the empirical data collected for this thesis did not record any mentions of particular issues with regard to the legal (in)accessibility of places. More of an identified problem seemed to be the fact that agricultural land especially, but also forested land, is not usually adjusted for recreational use and therefore not attractive to people or easy to use for recreational activities.

The OPN is an ambitious plan, on the basis of which, some actions have been taken already and welcomed by citizens. However, OPN does not specify many details in terms of how all the actions are to be achieved. This is to be defined in OPPN but

many of OPPN's initiatives have not been implemented yet. Thus, the fine details of spatial development are ill-defined at present, and that leaves space open to abuse for personal gain. The control over spatial development and the individual steps of OPN's implementation is thus deemed very important.

Finally, OPN aims high in terms of the quantity and variety of open spaces that are to be established, but since this document is not accompanied by any action plans which would specify the time and financial frame in which to achieve its ambitions, the care of green spaces may end up rather low on the municipality agenda, which was admitted also by some of the authorities' interviewees. In addition, when established, the assurance of the long-term quality of green spaces should be kept in mind since not only the size but also quality of green spaces is important for their viability. The immediate establishment of the audits, therefore, should be considered.

9.1.5.2 Edinburgh

In Edinburgh, the use of peri-urban green areas and accessibility, in general, pertains, as previously mentioned, to the green belt and its role in current and future planning. According to the regional and local strategies (CEC, 2010; CEC, 2011c; CEC, 2013a; CEC et al., 2000), the prevention of coalescence of settlements continues to be the primary role of the green belt (CEC et al., 2000). Furthermore, the discussions with the authorities' interviewees elucidated that the maintenance of the landscape setting is another requirement of the green belt, which is very important. Focus groups' discussions have, to some extent, confirmed that. People are most likely to value green belt land primarily for its role in preserving the city's landscape setting, which is, as is stressed in the ELSP: "an essential part of its character as an historic capital city with an international reputation" (CEC et al., 2000, p.13).

Its importance for countryside recreation seemed to be less important, a view that was shared by the interviewees. Keith Logie, for example, stated that recreational use of the green belt is only now being encouraged, as opposed to, until recently, its primary emphasis as land for agricultural use. Interestingly, the focus group participants did not feel inhibited from undertaking any kind of recreation that they

might want to pursue in the green belt area, but they did not have the opportunity to do so or because the land was legally closed for public use. On the contrary, they suspected there are opportunities that this area has to offer which have yet to be discovered. The reasons they seldom used green belt areas were two-fold.

First, they thought the informal green areas of green belt were unappealing. This echoes Shoard's argument that, parallel to the primary role of the green belt, to prevent coalescence, there is no interest in green belt land itself. She states: "All that is expected of this is that the land involved should remain open" (Shoard, 2000, p.88).

However, the green belt offers some intrinsically valuable features that are attractive to people. With regard to them, the second reason for the focus groups' participants' rare use of these spaces, in relation to specific barriers/characteristics of accessibility, included the length of time it took to get there, and the lack of information about the leisure and recreational opportunities of the green belt.

The ELSP states the role of the green belt is to protect "the land around the City as open countryside with *easy access* [italics added by author] for the enjoyment of the local population", and further paragraphs also mention having a "good level of access by public transport". In relation to the green belt, ELSP does not mention walking and cycling, although it states that "accessibility by public transport, foot and cycle is fundamentally important in achieving more socially inclusive and environmentally sustainable travel patterns" (CEC et al., 2000, p.38). In fact, the unsatisfactory cycling and walking network within the green belt is exposed in RWELP (CEC, 2006): "There are already a number of sites that attract visitor interest although there is no comprehensive network of recreational routes linking them."

However, the scope of RWELP's Policy E26 – Walkways/Cycle Routes and Rights of Way is to "improve existing rights of way and will seek to create a network of linked walkways/cycle/horse riding routes throughout the plan area. The Green Belt,

the coast, the main waterway corridors and disused railway lines will be priority areas" (CEC, 2006). The unsatisfactory cycling and walking network within the green belt have been recognised also in the soon-to-be adopted Edinburgh LDP and some measures and actions with regard to easy access to the countryside have been proposed. More specifically, LDP's proposal to extend "the existing green corridors onto the wider countryside" on the west of the city (Edinburgh Park/South Gyle) is another contribution to strengthen/establish rural-urban linkages. This may help overcome the individualism of town-country planning, which Shoard (2000) criticised for the appearance of peri-urban areas which have been a result of this approach.

Moreover, the importance of green networks throughout the whole city is to be considered in future developments (CEC, 2013a), which is encouraging since it is in line with people's preferences, as was revealed by the questionnaire and focus group results. One of participants' favourite green space types were green corridors, especially along riverbanks/waterways, e.g. the Union Canal, Water of Leith and River Almond, and so the maintenance, provision and improvement of "public access to and along the water's edge" is particularly welcome. Although the LDP argues for the importance of green networks, the policies with regard to these water corridors are more specific in RWELP. Policy E27, for example, addresses the River Almond, Water of Leith and their tributaries, and encourages: "[…] the completion of continuous walkway/cycle routes along their banks, where appropriate, and the establishment of footpath links with adjacent sites" (CEC, 2006).

Furthermore, on the subject of people's appreciation of the beach, LDP (CEC, 2013a) proposes "an east-west path that will form part of the city-wide coastal promenade" the lack of which was also stressed by Mark Turnbull. Access to the coast is also addressed in the RWELP Policy E13 (CEC, 2006): "The Council will support new and improved recreational access to the coast where appropriate, while attempting to minimise the impact on nature conservation interests."

There are several other proposals in the LDP: to provide either more different green space types and/or enrich the existing ones, and ease access, in terms of improving the pedestrian and cycle infrastructure and implementing some traffic measures, such as reducing speed limits. Multi-functional parklands, woodlands and grasslands, country paths, wetland habitats, off-site multi-user paths, and off-road path links may thus all encourage and ease people's use of the urban fringe and countryside areas. In addition, the new orbital bus route and tram line will help in accessing places more quickly since slow public transport was one of the barriers to use of peri-urban green spaces. This may also enhance greater bus use, if their speed is improved and consequently, faster access to places would contribute positively to sustainable accessibility, as was revealed via the outcome of the SAL sustainability index.

In terms of sustainable accessibility, the policies strive to achieve sustainability strategically, by generally promoting walking and cycling (CEC, 2013a; CEC et al., 2000), and operationally, by planning improvements in terms of increasing access points to cycle/footpath links and establishing new footpath and cycle links where possible. Since on-road cycling and the absence of designated cycle paths along most of the city's roads was one of the major barriers to cycling, as found in the focus groups' discussions, the establishment of a network of core paths, as proposed in the core paths' plan (CEC, 2008), with the aim "to give people reasonable access throughout their area for walking, cycling, horse riding and to inland water", meets this need for safer cycling the most.

Finally, taking into account the proposed adjustments to the green belt for future development, the recognition of the need to protect open space as "important to both present and future generations as once an area of open space has been built upon, it is likely that the space will be permanently lost" (CEC, 2006) is, perhaps, the most crucial matter in relation to peri-urban land, especially its informal green spaces, which may be, due to its low intrinsic value, especially under this threat.

9.1.5.3 Inclusive planning

In both cities, the authorities interviewed argued for full public consultation on local plans and accordingly, inclusive planning aims have been met. The focus groups' discussions, on the other hand, have shown that the reality is quite different; whilst older participants seemed to be resigned to 'demand' being involved, the younger ones were more displeased by the fact that they have not been listened to.

The authorities follow a formal procedure in the implementation of a plan, such that the public is consulted at different stages. However, public participation is completely voluntary and self-initiated and for these reasons, misses out on obtaining the views of the majority of the population. As one of the interviewees in Edinburgh said, the most comments they get are from retired planners and organisations which are personally interested in the city's development, or from those who are directly affected by the plan.

The Edinburgh city local plan states that: "Social inclusion is important to sustainable development. This means seeking to build better, balanced communities and providing *everyone* with decent homes in safe, *attractive and accessible surroundings* with convenient access to jobs and services" (Anderson, 2010, p.9; [italics by the author]).

To reach the wider population, information should be presented in an appropriate format, with regard to the level of people's education, age, occupation and other factors which might be influential. Edinburgh Council, for example, has made progress by using social media, to invite and remind people to comment on some Council proposals. This may not be an appropriate format for the older generation, however; for them, workshops, leaflets, etc. might work better. However, it is hard, as Sarah Hartop said, since the wishes of everybody can never be fully accommodated.

9.2 Conclusion

The main research contribution to the field of spatial planning is three-fold. First, it contributes to the existing knowledge of the social and spatial characteristics of peri-urban areas. People's perceptions of, and preferences for, reflected in their patterns of use of, peri-urban space, are complex and this thesis is making a contribution to the general knowledge of these patterns, such that it may enhance our understanding of this type of space. Secondly, it shows the possibilities of taking a mixed-method research approach as a tool to investigate the characteristics of this highly complex setting. Third, it provides a better understanding of and, guidance on, the issues that planners and policy-makers can use to inform their decisions, which may help direct and inform future use of peri-urban areas.

9.2.1 How can the knowledge of inner-city dwellers' perceptions and uses of peri-urban green spaces contribute to more effective management strategies for this space?

Peri-urban areas encompass a great diversity of land uses, activities, perceptions, and the needs of a variety of stakeholders. They have a particular and yet diverse character, driven by the functional and morphological interactions of the two worlds between which they are placed, i.e. the rural and the urban. All these characteristics assign them with both opportunities and a complexity when dealing with them. Peri-urban areas *as such* have only received focused attention from researchers in recent years. They have shown that these areas need to be addressed in a collective manner, in order to acknowledge and deal with a variety of views and to accommodate a variety of needs. However, the recognition of peri-urban issues and the challenges at an operational level, with regard to spatial policies, is still rather low.

This research investigated the social and spatial aspects of peri-urban areas in the two case studies, in order to understand the interactions that shape these spaces. Whilst the direct involvement with (potential) users of this space uncovered their perceptions of, preferences for, and use of, peri-urban green spaces, the comparison of the two cities with different spatial structures (Ljubljana – green wedges; Edinburgh – green belt) showed how the specific spatial structure of a city affects

people's accessibility and, consequently, their use of green spaces, both urban and peri-urban.

The results of this research indicate that people's preferences for green space attributes are cross-cultural; people, in general, enjoy green spaces that are natural-like, though modestly managed. This was a result that was generally expected but the considerable appreciation and use of green corridors was a more unexpected result. People appreciated them because they were a good asset when they wanted to go walking – largely, their favourite activity. Beside green corridors, people greatly valued semi-natural peri-urban green spaces, such as woodlands, meadows, river corridors, etc., but they held more negative connotations of peri-urban areas as such, perceiving them as spaces linked with random, uncontrolled and unmanaged land use.

The detailed analysis revealed that those peri-urban areas that were perceived negatively consisted of land uses that were similar in both cities, despite the fact the two cities had different cultural, geographical, historical and other characteristics. This confirmed the findings of prior researchers who characterised peri-urban space, and its land uses, as being on-hold, ephemeral, and ambiguous but, at the same time, globally, the same (Qviström and Saltzman, 2006; Shoard, 2000). Such (generic) land uses impoverish an area's sense of place and consequently, diminish the value of its landscapes.

This research has recognised the importance of extensive *semi-natural* green spaces and their benefits in a social and ecological sense. Since semi-natural green spaces are rarely to be found in cities, this is the opportunity for peri-urban areas, by allowing them to be open for use, to positively contribute to people's mental health, stress reduction, and relaxation. The contribution that green spaces can offer have been demonstrated by numerous research studies to date, and now the findings from this study have confirmed this too. In addition, quietness, increasingly sought in green spaces due to people's busy lives today, is something seldom to be found in, for example, a small urban park, and therefore, that is another advantage of peri-

urban green spaces being sufficiently large to accommodate this need. It is crucial, therefore, to preserve peri-urban green spaces; once they lose their intrinsic value and become cluttered, contested *peri-urban* spaces, people will not value them anymore.

However, while preservation of open spaces is essential, it is not enough. Different cities have different peri-urban green space types, of various sizes and with different attributes, but their common issues are management and maintenance. Often cities guarantee open spaces just for the purpose of openness, which some green belt land exemplifies. However, this research's findings have shown that if a space is not managed, at least to a minimum level (and possibly specifically assigned for recreational and leisure purposes), people will not use it.

Furthermore, this research has demonstrated that people like to enjoy different types of green spaces, in accordance with the activities they wish to pursue there. In this sense, peri-urban green spaces, unlike urban ones, offer users the possibility to 'discover and shape places' (Goličnik, 2005), especially when they take into account people's preference for natural-like environments over highly maintained or even built and inflexible places. To allow this, however, one condition needs to be fulfilled: accessibility to these places.

In facilitating access to places, spatial and management policies were the most influential in terms of which, and how, people will access them. The research findings have contributed to the existing knowledge of the advantages and disadvantages of two planning strategies, green wedges and the green belt. It was not the intention of this research to show a preference for one over the other planning strategy, conversely, on the basis of the findings, this thesis argues for a more flexible approach to planning and, possibly, a combination of several approaches. For example, Ljubljana's green wedges, reaching deep in to the city centre, have been shown to be convenient in terms of enabling people fast accessibility to natural-like green spaces. However, such convenience may lead to their overuse, which has been happening to some parts of Ljubljana's most popular green wedges.

The open spaces of Edinburgh's green belt, on the other hand, have proven to be used very rarely for recreational and leisure purposes, although, contrary to expectations, the lack of accessibility did not seem to be the main issue. These spaces were simply not very attractive to people to use them. This finding enhances the critique of keeping green belt land open per se, and of not encouraging it to be used for some leisure activities, although initially, this was one of the green belt's aims, too. However, Edinburgh offers a variety of green space types inside the city of which, many are natural-like, and so this mitigates the need to travel far to get the same experience.

The empirical findings in this study contribute to the existing knowledge of building a greater understanding of the reasons behind people's use of individual peri-urban green space types. On the basis of the findings, this thesis argues that no one green space type should be replaced by another, rather, there is a need to conserve all of them, since they serve different people, with different needs, and at different times. Furthermore, it stresses the importance of taking a proportionate approach to the management and maintenance of green spaces, that is, between urban and peri-urban green spaces. Many times, urban spaces are maintained intensively whilst peri-urban green spaces are ignored. Their neglected look, therefore, puts people off using and valuing them.

9.2.2 Evaluation of the research methodology

This thesis applied a mixed-method research approach in its study of the research phenomena. It took both the spatial and social perspectives into account and this two-fold approach then enabled an invaluable view to be taken of the same issues from different perspectives. In so doing, the combination of methods allowed issues to evolve, to become clearer and to challenge propositions, which has been crucial to understanding the diversity and complexity of peri-urban land use and the activities undertaken there. The triangulation of methods, supported by the theoretical approaches, such as the concept of a sense of place, grounded theory and landscape planning approach, helped to assess the wealth of information collected, and rigorous

refinement allowed for 'the grain to be separated from the chaff', such that it led to the main and most crucial findings being clarified and highlighted.

The empirical knowledge, which was gleaned from direct interaction with those people who use and thus interact directly with these types of space, and also from those who make decisions regarding future management of it, is at the heart of this thesis, as it depicts the 'real-life' views of, and opinions on, the issues under investigation. The spatial analyses have, additionally, either strengthened or conflicted with these views and accordingly, pointed to their relevance for future planning and management of peri-urban areas, in order to ensure inclusive green space provision.

In addition, the utilisation of two case studies, and the implementation of identical methods on both of them, provided a comparable ground for the assessment of the three main topics that were investigated (the notion of peri-urban space, its use and people's perceptions of it, and accessibility). It has proven to be useful in differentiating between common and case-specific preferences for, and characteristics of, peri-urban green space use. These two cases may also provide a valuable comparison for future explorations of peri-urban space, and/or may serve as a basis for those assessments.

9.2.3 Planning and policy implications

This research aimed to bridge the gap between planning practice and the actual activities and uses of peri-urban areas. Its findings have a number of important implications for future policy contexts as well as for planning practice. The recommendations presented here can serve as guidelines in the future planning and management of peri-urban areas, in three ways, but equally important, this research has recognised that the greatest need is bridge the 'language barrier' between planners, users, designers and authorities.

Accordingly, the recommendations are divided into:

a) Recommendations with regard to land use planning which involves strategic regional and municipal planning decisions. These recommendations encompass the majority of this thesis' recommendations.

b) Recommendations with regard to design of peri-urban areas (as a category of land use) that is commonly a domain of landscape architecture. These recommendations pertain to more detailed planning and design of peri-urban spaces, for example to planning of peri-urban recreational spaces and facilities within them, designs of signage, etc. As follows, these recommendations are listed under the section 'Factors to consider in the design of peri-urban green spaces'.

9.2.3.1 Accessibility

> Green corridors

In terms of promoting more sustainable travel, green corridors were shown to be an opportunity not yet used to a sufficient extent. Green corridors are valuable for many reasons: they are a green space, per se; they enable safer travel, on foot and by bicycle, than on the road; and they have many ecological benefits. Since this research's findings revealed they were people's favourable asset, they may also represent a way to benefit the mental health and wellbeing of people who, for various reasons (e.g. lack of time, interest, etc.), would not normally use green spaces.

Green corridors have previously been recognised as an asset beneficial to people and nature and a considerable number of strategies have proposed to use green corridors to connect cities with their hinterland. For example, the 'Countryside in and around towns' (CIAT) programme (and the green infrastructure (GI) strategies that have followed it) approached green corridors as "a bridge to the country" (CA, 2005)(CA, 2005, p.8) and 'Mardyke Greenway and Reedbeds' (Natural England, 2009) to greater strategic partnerships such as 'CGV Green Network Parnership' and 'Plymouth Eastern Corridor Urban Fringe' show the successful transfer of research

knowledge to practice (Natural England, 2007). Such exemplars could be used to promote green network planning more widely.

> Physically segregated on-road urban cycle routes

Many people find the busyness of roads and heavy traffic intimidating and it puts them off cycling; they would rather use a car to drive to a green space. Where it is not possible to implement green corridors, segregated cycle routes and footpaths are the next best option.

> The restructuring of transport priorities

If the sustainable aims, put into most transportation and planning policies, are to be achieved, more rigorous measures have to be made to minimise car use and promote the use of other modes of transport. These include: 20mph areas, closing the streets to cars, and promoting public transport in parallel with enhancing its speed and connectivity.

> More information

Both signage on the roads and information, in the form of leaflets, websites, mobile applications, etc., about the green spaces in and around the city, were found to be appreciated by people and may encourage their use of (peri-urban) green spaces.

9.2.3.2 Inclusive planning

> The active involvement of citizens

'Not being listened to' was the main issue revealed in this thesis, with regard to negative perceptions about public participation. However, the ability to accommodate a diversity of needs and maximise the benefits is a fundamental principle of inclusive planning (Van Herzele et al., 2005). Policies should be flexible enough to recognise 'what is going on in real life' and respond accordingly, which is only possible with the active involvement of citizens in the planning and management of peri-urban areas. Consequently, citizens' sense of place gets stronger which may positively benefit the future of peri-urban areas.

The flexibility of policies may to a great extent depend on the government arrangements of the respective country. For example, in Western Europe, public-private partnerships and actions which include volunteers are a common practice in peri-urban areas whilst, in countries with a socialist history, policy-making in peri-urban areas is mainly overruled by the state (Aalbers and Eckerberg, 2013). On the basis of their case studies, the same authors argue for a greater regional governmental power to guide development and to achieve the balance between economic, environmental and societal needs. However, they also observe that low participation of the general public remains a major challenge in peri-urban policies' formulation in many regions across Europe, and should be addressed with appropriate tools, which need to be adjusted to each specific case.

This research looked at two cities with considerably different planning and management histories. Despite some differences in ways to involve public, the following recommendation derive on the basis of findings from both cities and can be used in cases similar to either or both.

The involvement of citizens should happen at an early stage of the plan-making process by recognising their needs and wishes. Rather than in the design itself, it is necessary to involve them in activities and programmes which will uncover the spatial possibilities that will accommodate their needs. The practical methodological approaches may involve different techniques, such as workshops, leaflets, social media, public hearings, etc. For example, in this thesis, a questionnaire was shown to be an appropriate method to get a general overview of the state of peri-urban areas, whilst the focus groups were a good method to find out the detailed reasons behind people's (poor) use of places. Most important, perhaps, are two things: first, the need to provide information in the right format, according to the socio-economic background of the public and, second, to *want* to engage in a dialogue with the public instead of seeing it as a duty and possibly something of a nuisance.

> Comprehensiveness

To overcome a one-dimensional approach to these spaces and to ensure their flexibility and multifunctionality, co-operation, at various authority levels, a dialogue between different departments and the interaction with different stakeholders, is needed. Only the inclusion of all parties in future planning, can help to maximise the benefits of peri-urban areas and, at the same time, equally share the costs and benefits among the parties involved (Van Herzele and Wiedemann, 2003).

A multifunctional approach has already been noted in a number of cooperations, which bring recommendations for policy implications. Examples of such cooperatations come mainly from multi-sectoral partnership between rural and urban areas, e.g. associations with regard to public transport or water management. Contributions are especially effective where they have overcome the sectoral divide and have managed to form recommendations based on joint needs, views and wishes of all stakeholders affected. EU research programmes (e.g. the PLUREL project, SURF, PURPLE network, etc.) that bring evidence from different perspectives have been recognised as especially valuable (Artmann et al., 2012). The PURPLE network, for example, showed successful exemplars of how multi-sectoral partnership has been achieved (see e.g. South Moravian and Flanders examples (PURPLE, 2013). Furthermore, the PLUREL project, on the basis of their case studies showed the ways in which the planning approach can respond to the specific needs of the rural-urban region (Nilsson et al., 2013).

At a policy level, this should result in a set of programmes, strategies and action plans for the planning and management of the area, which would also define time frames and methods to achieve goals. All documents need to be produced on the basis of consultations with different stakeholders and agreed collectively.

9.2.3.3 The management of peri-urban areas

> The scale

Whilst urban green spaces are clearly the responsibility of municipalities, peri-urban areas that connect cities and the countryside, often end up in a no-man's land between neighbouring municipalities; they are regarded as being 'on the fringe', literally and conceptually. This thesis, therefore, proposes that a regional approach should be taken to deal with strategically with peri-urban issues.

Addressing these matters on a regional scale has been long recognised as important in meeting sustainability aims, because this is the scale which shows the interconnectedness of ecosystems (Botequilha Leitão and Ahern, 2002; Forman, 1995). In terms of planning for sustainable peri-urban accessibility, this thesis thus recognises it as an appropriate scale for the integration of green corridors as connecting structures of the city and countryside.

The importance of integrating green corridors at a regional level has also been the message of the European Commission (EC, 2010), several EU financed programmes such as the PURPLE network, and national programmes and strategies such as the previously mentioned CIAT programme, and many academic findings to date, for example, Tjallingi argued: "At the regional and urban level, the river network is usually the carrying structure. Here the synergy with footpath and cycle track networks and green corridors is an obvious option" (EC, 2010). The social and environmental benefits of green corridors are clear and the onus is now on the authorities to take appropriate action.

Since it may be difficult to involve the wider public at the regional level in any planning procedure (EC, 2010), collecting information about people's needs, wishes and perceptions is a good way to overcome this barrier. This can be done by methods such as questionnaires and open discussions. This research, for example, has elucidated people's appreciation of green corridors and the subsequent integration of this green structure into a wider planning frame can be an example of how the

public's wishes and needs can be acknowledged at a strategic level, in order to meet sustainable accessibility goals.

> The spatial concepts

This research has looked in to, and compared, two different spatial concepts, i.e. green wedges and the green belt. Throughout the thesis, a number of observations have been made as to the advantages and disadvantages of both and, although there is no single answer to which one is better, for the sustainable use and accessibility of peri-urban green spaces, some general recommendations can be drawn together.

This research promotes spatial concepts that underpin a clear and firmly shaped urban structure, of which, the compact city is a good example, namely, a clearly defined urban structure has proven to be more successful in influencing people's travel behaviours and thus guiding them in a more sustainable direction (Pinho et al., 2010a; Schrijnen, 2000).

A clearly shaped urban structure is the primary characteristic of the green belt concept, however, a green belt cannot ensure that natural green spaces are within a five-minute walk of most people's homes. In that sense, green wedges seem to be a better spatial concept that enables people fast access to natural green spaces whilst still living close to urban services. Still, introducing green corridors which would connect compact urban structures with open, green belt land may compensate for any green wedges' strategy and sufficient provision of qualitative green space within the urban structure may work even more successfully.

However, on this point, the regional level needs to be stressed again. Only with a good green infrastructure policy at a regional level, can the necessary quality and quantity of green spaces be attained. A good example is again the CIAT/GI programme; its approach has been to establish regional coalitions across the whole UK. These coalitions have gathered information on local situations and needs and then influence local authorities on GI in order to ensure that GI is referenced at multiple scales in regional, sub-regional and local policies (Natural England, 2007).

> Factors to consider in the design of peri-urban green spaces

In terms of the types of green space to consider, *having a choice* is this thesis' leading recommendation, meaning that people need to be offered different kinds of green spaces and then allowed to choose the one(s) they prefer the most for their activities.

Although peri-urban green spaces cannot be expected to be maintained at the same level as urban green spaces, there should be basic provision of facilities and regular maintenance of them. When places look abandoned, messy, overgrown with shrubs and thus, not penetrable, people will not use them, as this research's findings has been proven, therefore, a basic network of paths is needed, equipped with signage and/or some other site information. Additional facilities may include comfort points, picnic/barbecue places, and facilities for children.

> Proactive management and maintenance

Proactive management is the answer to *allowing choice.* It is specifically important in the peri-urban case since these places are, by default, not distinctive and hence, their flexibility in responding to temporal and long-term needs is crucial.

Moreover, this thesis strongly agrees with Tjalingi (Attwell et al., 2005), who argued that every design study should be accompanied by a maintenance plan. It happens too often that some sites are designed and made ready for public enjoyment, but the absence of any long-term maintenance plan results in the areas' degradation over time, which leads to their loss of quality, and eventual abandonment by the public.

9.2.4 Setting the research into a wider perspective

This research showed that peri-urban landscapes are diverse and serve for different needs of different people. This is in line with The European Landscape Convention which has explicitly stressed the importance of acknowledging the diversity of landscapes in natural, rural, urban and peri-urban areas as an important part of the quality of life for people, their wellbeing and as a part of European identity (Council of Europe, 2000). Furthermore, this research has recognised public engagement in

planning and management processes crucial for viable future of peri-urban landscapes. This act, also emphasised in the European Landscape Convention, thus needs to be taken into account, in current and future landscape planning strategies, more rigorously and robustly.

This research findings and on their basis proposed specific recommendations are seen as a tool to facilitate the achievement of the wider aims of inclusive planning of all landscapes in order to ensure global sustainable future.

9.2.5 Limitations of the study

Throughout this research process, this thesis faced multiple practical challenges and needed to compromise on some objectives and accept various limitations according to the individual method used. The general ones were:

> The substitution of the originally planned 'accompanied field visit' with the focus group method

The 'accompanied field visit' aimed to explore *everyday,* unpleasant and neglected peri-urban open spaces; inner-city dwellers' in-depth views, opinions and feeling were to be collected on site to allow their immediate reflection on places to be obtained. However, due to health and safety restrictions, as well as general difficulties in recruiting participants, this method was replaced with the focus group method. The latter also proved to be a challenge, specifically in recruiting participants and achieving a gender balance.

> Practical problems with implementation of the questionnaire, focus groups and interviews

As mentioned in previous paragraph, despite the best efforts, a gender balance was not achieved in recruiting focus group participants. The participants were biased also in other demographic characteristics: all Edinburgh's young group participants were students, both Edinburgh and Ljubljana young group participants were (to be) highly educated (university level). In addition, none of the group included participants of

any minority ethnic groups which resulted in the lack of insights into their needs and preferences for the use of, and accessibility to, peri-urban green spaces.

The gender imbalance was encountered also when undertaking the questionnaire method. Although gender differences were not the focus of this research, the imbalance might have influenced the overall results, so therefore, they needed to be interpreted with caution, and in the interpretation of the outcomes arising from the statistical analysis, this issue was taken into account too. Furthermore, both Edinburgh and Ljubljana samples were not truly representative since they were biased towards younger people. In addition, most of the respondents aged up to 25 years old were students (in particular in Edinburgh sample). These issues, too, were taken into account when analysing both samples. The additional limitation of the questionnaire method related to the general uncertainty about the effectiveness and validity of some of the types of questions asked, such as those involving the use of a Likert scale, which is by no means flawless and has been criticised on several grounds (see, for example Buttle, 1996).

With regard to experts interviewing, not all of the experts that had been contacted responded to the request (and several follow-up reminders). This pertained especially to the experts with the transportation background. Without a doubt, their view would add another dimension to the issues researched.

> The restrictions of the data needed for spatial analyses

For the execution of both methods of the spatial part of the study, i.e. the overlay analysis and the SAL, some of the data sets were not accessible and the use of those data might have produced different results. In addition, the overlay analysis is a rather subjective method since the choice of the criteria lies with the researcher. The proposed peri-urban area is therefore certainly not absolute and may be, for some other purpose, outlined differently.

In summary, conducting more focus groups or sampling a larger number of people for the questionnaire method would undoubtedly enhance the validity of the research

findings. However, given the time-frame available to carry out this study, and the fact that it was carried out by a single researcher, the limitations mentioned above, arguably, were mitigated by using the mixed method strategy since it enabled assessment and comparison of the findings of one method with another and, accordingly, strengthened the findings overall.

9.2.6 Further concerns

Two aspects have been identified as having a strong impact on people's use of and, accessibility to, peri-urban green spaces, which both require more research. First is the significant importance of *perceived* accessibility to places, which was not the focus of this research but it has proved to be highly relevant to the frequency of use of peri-urban green spaces. Accordingly, how people perceive distances, by different means of transport, socio-demographic characteristics, etc., and how this influences their frequency of visits to peri-urban green spaces, requires further research.

The second aspect relates to *chance*: how important it is to enable people to have the chance to interact with these spaces, and what does this mean for people's perceptions and use of these places? This research revealed that most people wished to have more green spaces in and around their city, although another finding showed that their frequency of use was not significant. More theoretical research, therefore, as to people's place attachment and its importance for preserving peri-urban green spaces is needed.

In addition, whilst this thesis focused on the accessibility of peri-urban green spaces to the inner-city dwellers, the SAL revealed the opposite; the inaccessibility of urban green spaces for people who live on the fringes of the city. Their perspectives, stories, opinions and needs thus need more research.

Finally, this thesis argues for taking an empirical approach; more empirical studies, on peri-urban issues (which are still relatively unknown) would help in understanding the actual extent of this area and facilitate its future planning and management.

References

Aalbers, C. B. E. M. & Eckerberg, K. 2013. Governance and Sustainability of Peri-Urban Areas: A Comparative Analysis of the PLUREL Case Studies. *In:* NILSSON, K. S. B., PAULEIT, S., BELL, S., AALBERS, C. & NIELSEN, T. A. S. (eds.) *Peri-urban futures: Scenarios and models for land use change in Europe.* Springer Publishing Company.

Aalbers, C. B. E. M., Van Dijk, T., Van Der Jagt, P. D. & Westerink, J. 2009. Analysis of regional spatial planning and decision making strategies and their impact on land use in the urban fringe: Case study of The Hague Region, The Netherlands. PLUREL report D3.3.1.

Adell, G. 1999. Theories and models of the peri-urban interface: a changing conceptual landscape. Literature review. *Development Planning Unit, UCL, London, UK*.

Ahern, J. 1995. Greenways as a planning strategy. *Landscape and Urban Planning,* 33**,** 131-155.

Ahern, J. 2005. Theories, methods and strategies for sustainable landscape planning. *In:* TRESS, B., TRESS, G., FRY, G. & OPDAM, P. (eds.) *From landscape research to landscape planning: Aspects of integration, education and application.* Springer.

Alexander, C. 1977. *A pattern language: towns, buildings, construction*, Oxford University Press, USA.

Allen, A. 2006. Understanding environmental change in the context of rural-urban interactions. *In:* MCGREGOR, D. F., SIMON, D. & THOMPSON, D. A. (eds.) *The Peri-Urban Interface: Approaches to Sustainable Natural and Human Resource Use.* London: Earthscan.

Allen, A. & Davila, J. 2000. Mind the gap! Bridging the rural-urban divide.

Anderson, D. 2010. Edinburgh City Local Plan: Written Statement. Edinburgh: The City of Edinburgh Council.

Andrews, R. B. 1942. Elements in the Urban-fringe Pattern. *The Journal of Land & Public Utility Economics***,** 169-183.

Antrop, M. 2005. Why landscapes of the past are important for the future. *Landscape and Urban Planning,* 70**,** 21-34.

Antrop, M. & Van Eetvelde, V. 2000. Holistic aspects of suburban landscapes: visual image interpretation and landscape metrics. *Landscape and Urban Planning,* 50**,** 43-58.

Antrop, M. & Van Eetvelde, V. 2009. A stepwise multi-scaled landscape typology and characterisation for trans-regional integration, applied on the federal state of Belgium. *Landscape and Urban Planning,* 91**,** 160-170.

Apostolopoulou, E. & Pantis, J. D. 2009. Conceptual gaps in the national strategy for the implementation of the European Natura 2000 conservation policy in Greece. *Biological conservation,* 142**,** 221-237.

Artmann, J., Huttenloher, C., Kawka, R. & Scholze, J. 2012. Partnership for sustainable rural-urban development: existing evidences. RURBAN (Partnership for sustainable urban-rural development).

Attwell, K., Beer, A., Bendl, J., Bjornberg, K., Buizer, M., Chapa, J. M., Costanzi, C., Duhem, B., Ellefsen, U., Erhart, E., Eronen, M., Grahn, P., Grundt, G., Guldager, S., Halleux, J. M., Hanocq, P., Hanouskova, I., Harrison, C.,

Jorgensen, K., Kaliszuk, E., Kucera, T., Lapintie, K., Lindholm, G., Maijala, O., Malbert, B., Martincigh, L., Meriggi, M., Nyhuus, S., Oppermann, B., Pauleit, S., Reeh, U., Scudo, G., Schöbel, S., Ståhle, A., Stiles, R., Szulczewska, B., Tjallingii, S., Vähä-Piikkiö, I., Van Herzele, A., Vesely, M., Wagner, K., Werquin, A. C. & Zaleckis, K. 2005. COST Action C11: Green Structure and Urban Planning. *In:* WERQUIN, A. C., DUHEM, B., LINDHOLM, G., OPPERMANN, B., PAULEIT, S. & TJALLINGII, S. (eds.) *Final report.* Brussels: European Commission.

Ball, K., Bauman, A., Leslie, E. & Owen, N. 2001. Perceived environmental aesthetics and convenience and company are associated with walking for exercise among Australian adults. *Preventive medicine,* 33**,** 434-440.

Balram, S. & Dragićević, S. 2005. Attitudes toward urban green spaces: Integrating questionnaire survey and collaborative GIS techniques to improve attitude measurements. *Landscape and Urban Planning,* 71**,** 147-162.

Banister, D. 1992. Energy use, transport and settlement patterns. *Sustainable Development and Urban Form. London: Pion***,** 160-181.

Barker, K. 2006. *Barker Review of Land Use Planning: Final Report - Recommendations,* London, The Stationery Office.

Bart, I. L. 2010. Urban sprawl and climate change: A statistical exploration of cause and effect, with policy options for the EU. *Land Use Policy,* 27**,** 283-292.

Bauer, J., Kniivilä, M. & Schmithüsen, F. 2004. Forest legislation in Europe: How 23 countries approach the obligation to reforest, public access and use of non-wood forest products. Geneva: United Nations Economic Commission for Europe.

Bell, S., Montarzino, A. & Travlou, P. 2006. Green and Public Space Research: Mapping and Priorities. West Yorkshire: Department for Communities and Local Government.

Bertolini, L., Le Clercq, F. & Kapoen, L. 2005. Sustainable accessibility: A conceptual framework to integrate transport and land use plan-making. Two test-applications in the Netherlands and a reflection on the way forward. *Transport policy,* 12**,** 207-220.

Bhat, C., Handy, S., Kockelman, K., Mahmassani, H., Chen, Q. & Weston, L. 2000. Development of an urban accessibility index: Literature review. Research project conducted for the Texas department of transportation. Texas, Austin: University of Texas, Austin, TX: Center for Transportation Research.

Botequilha Leitão, A. & Ahern, J. 2002. Applying landscape ecological concepts and metrics in sustainable landscape planning. *Landscape and Urban Planning,* 59**,** 65-93.

Bramley, G., Hague, C., Kirk, K., Prior, A., Raemaekers, J. & Smith, H. 2004. *Review of Green Belt Policy in Scotland,* Edinburgh, Scottish Executive Social Research.

British Archeology. 2001. Earliest evidence found of settlers in Scotland: Hazelnuts and stone tools excavated near Edinburgh date to around 8500 BC. *News* [Online], 2013. Available: http://www.archaeologyuk.org/ba/ba60/news.shtml#item1.

Brown, G. & Raymond, C. 2007. The relationship between place attachment and landscape values: Toward mapping place attachment. *Applied Geography,* 27**,** 89-111.

Bryman, A. 2008. *Social Research Methods,* New York, Oxford University Press Inc.

Burgess, J., Harrison, C. M. & Limb, M. 1988. People, parks and the urban green: A study of popular meanings and values for open spaces in the city. *Urban studies,* 25**,** 455-473.

Busck, A. G., Kristensen, S. P., Præstholm, S. & Primdahl, J. 2008. Porous landscapes - The case of Greater Copenhagen. *Urban Forestry & Urban Greening,* 7**,** 145-156.

Buttle, F. 1996. SERVQUAL: review, critique, research agenda. *European Journal of marketing,* 30**,** 8-32.

CABE. 2008. Open Space Strategies Best Practice Guidance.

Cabello, J. M. A., Project, P., Fedenatur & De La Obra, J. H. 2012. Nature and Countryside within the Urban Fringe. European Periurban areas: Characterization and a management recommendations. Sevilla: European Federation of Metropolitan and Periurban Natural and Rural Spaces (Fedenatur).

Cadieux, K. V. 2008. Political ecology of exurban "lifestyle" landscapes at Christchurch's contested urban fence. *Urban Forestry & Urban Greening,* 7**,** 183-194.

Canter, D. V. 1977. *The psychology of place,* London, Architectural Press.

Carmona, M., Heath, T., Oc, T. & Tiesdell, S. 2003. *Public places - urban spaces: the dimensions of urban design*, Routledge.

Carr, S., Francis, M., Rivlin, G. L. & Stone, M. A. 1992. *Public space,* Cambridge, Cambridge University Press.

Castells, M. 1996. *The rise of the network society*, Blackwell Publishers Oxford.

Churchill, H. S. 1945. *The city is the people,* New York, Reynal & Hitchcock.

Coghill, H. 2008. *Lost Edinburgh,* Edinburgh, Birlinn.

Council of Europe. 2000. European Landscape Convention, Florence, 20 October 2000. *ETC No. 176.* Strasbourg: Council of Europe.

Commuting in Edinburgh [Online]. 2013. Edinburgh. Available: http://www.edinburgh-inspiringcapital.com/live/working_in_edinburgh/commuting_in_edinburgh.aspx [Accessed April 10, 2013].

Coombes, E., Jones, A. P. & Hillsdon, M. 2010. The relationship of physical activity and overweight to objectively measured green space accessibility and use. *Social Science & Medicine,* 70**,** 816-822.

Council of Europe. European landscape convention. 2000. Strasbourg.

Countryside Agency (CA). 2005. The countryside in and around towns: A vision for connecting town and country in the pursuit of sustainable development. Cheltenham: Countryside Agency.

Cunder, T. 2002. Strukturne spremembe v slovenskem kmetijstvu in razvoj podeželja. *DELA: Podeželje na prelomu tisočletja: Izzivi in problemi.,* 17**,** 123-137.

Curtis, C. & Scheurer, J. 2010. Planning for sustainable accessibility: Developing tools to aid discussion and decision-making. *Progress in Planning,* 74**,** 53-106.

Deming, M. E. & Swaffield, S. 2011. *Landscape architectural research: inquiry, strategy, design*.

Department for Communities and Local Government (DCLG). 2002. Planning Policy Guidance 17: Planning for open space, sport and recreation. London: HMSO.

Deutsch, K. E., Yoon, S. Y. & Goulias, K. G. Modeling sense of place using a structural equation model. 90th annual transportation research board meeting, Washington DC, 2011.

Dijkstra, L. & Poelman, H. 2010. *Regional typologies overview - Statistics Explained* [Online]. Eurostat. Available: http://epp.eurostat.ec.europa.eu/statistics_explained/index.php/Regional_typologies_overview [Accessed March 12, 2011].

DTLR. 2002. Green Spaces, Better Places: Final Report of The Urban Green Spaces Taskforce. London: Department for Transport, Local Government and the Regions.

EC (European Commission). 1990. Green paper on the urban environment. Brussels: European Commission.

EC (European Commission). 1999. European Spatial Development Perspective (ESDP): Towards Balanced and Sustainable Development in the Territory of the European Union, Agreed at the Informal Council of Ministers Responsible for Spatial Planning, Potsdam, May 1999. OOPEC.

EEA (European Environmental Agency). 2006. Urban sprawl in Europe: the ignored challenge. Luxembourg: European Communities.

EEA (European Environmental Agency). 2009. Transport at a crossroads: TERM 2008: Indicators tracking transport and environment in the European Union. *EEA Report.* Copenhagen: EEA, (European Environment Agency).

ELSPJLC (Edinburgh and Lothians Structure Plan Joint Liason Committee). 2000. Edinburgh and Lothians Structure Plan: Major Issues Report. *Edinburgh: ELSPJLC.* The City of Edinburgh Council, East Lothian Council, Midlothian Council, West Lothian Council.

ESPON. 2005. ESPON 1.1.1: Potentials for Polycentric Development in Europe. e. Project Report.

European Commission. 2010. Green infrastructure. European Commission.

Flanagan, S. 2010. Edinburgh City History. *Edinburgh City* [Online], 2013. Available: http://www.edinburgh-history.co.uk/edinburgh-city-history.html [Accessed 2010].

Forman, R. T. 1995. *Land mosaics: the ecology of landscapes and regions*, Cambridge University Press.

Forman, R. T. 2008. *Urban regions: ecology and planning beyond the city*, Cambridge university press.

Forman, R. T. & Alexander, L. E. 1998. Roads and their major ecological effects. *Annual review of ecology and systematics*.

Forman, R. T. T. & Godron, M. 1986. *Landscape ecology,* New York, Wiley.

Francis, M. 2001. A case study method for landscape architecture. *Landscape Journal,* 20**,** 15-29.

Frumkin, H. 2001. Beyond toxicity: Human health and the natural environment. *American journal of preventive medicine,* 20**,** 234-240.

Gallent, N., Andersson, J. & Bianconi, M. 2006. *Planning on the Edge: The context for planning at the rural-urban fringe*, Routledge.

Gayda, S., Haag, G., Besussi, E., Lautso, K., Noël, C., Martino, A., Moilanen, P. & Dormois, R. 2005. Sprawling Cities And Transport: From Evaluation to Recommendations: Summary Report.

Geertman, S. C. & Van Eck, J. R. R. 1995. GIS and models of accessibility potential: An application in planning. *International Journal of Geographical Information Systems,* 9**,** 67-80.

Gehl, J. 1987. *Life between buildings: Using public space,* New York, Van Nostrand Reinhold.

Gehl, J. 2010. *Cities for people*, Island Pr.

Geurs, K. T. & Van Eck, J. R. 2001. *Accessibility measures: Review and applications: Evaluation of accessibility impacts of land-use transport scenarios, and related social and economic impacts*, Rijksinstituut voor Volksgezondheid en Milieu.

Giffinger, R., Fertner, C., Kramar, H., Kalasek, R., Pichler-Milanović, N. & Meijers, E. 2007a. Smart cities: Ranking of European medium-sized cities. *Centre of Regional Science SRF, Vienna University of Technology.*

Giffinger, R., Fertner, C., Kramar, H. & Meijers, E. 2007b. City-ranking of European medium-sized cities. *Centre of Regional Science SRF, Vienna University of Technology.*

Giles-Corti, B., Broomhall, M. H., Knuiman, M., Collins, C., Douglas, K., Ng, K., Lange, A. & Donovan, R. J. 2005. Increasing walking: How important is distance to, attractiveness, and size of public open space? *American journal of preventive medicine,* 28**,** 169-176.

Glaser, B. G. & Strauss, A. L. 1967. *The discovery of grounded theory: Strategies for qualitative research,* Chicago, New York, Aldine Pub. Co.

Goličnik, B. 2005. *People in place: A configuration of physical form and the dynamic patterns of spatial occupancy in urban open public space.* PhD thesis, Heriot Watt University, Edinburgh College of Art.

Golobič, M. & Breskvar Žaucer, L. 2010. Landscape planning and vulnerability assessment in the Mediterranean. Ljubljana: Regional Activity Centre for the Priority Actions Programme.

The Scottish Government. 2013. *Reasons for Travel* [Online]. Available: http://www.scotland.gov.uk/Topics/Statistics/Browse/Transport-Travel/TrendReasonsforTravel [Accessed April 15, 2013].

Grahn, P. & Stigsdotter, U. A. 2003. Landscape planning and stress. *Urban Forestry & Urban Greening,* 2**,** 1-18.

Grant, L. 2010. Multi-Functional Urban Green Infrastructure. The Chartered Institution of Water and Environmental Management (CIWEM).

Gregory, D., Johnston, R., Pratt, G., Watts, M. & Whatmore, S. 2009. The dictionary of human geography. Wiley-Blackwell.

GROS (General Register Office for Scotland). 2010. *Scotland's Census Results Online (SCROL)* [Online]. Available: http://www.scrol.gov.uk/scrol/common/home.jsp [Accessed May 2013].

Guzelj, T. & Košak, T. 2003. Anketa po gospodinjstvih, 2003. Raziskava potovalnih navad prebivalcev ljubljanske regije. URBI, PNZ-PROJEKT NIZKE ZGRADBE & NINAMEDIA. Ljubljana.

Halden, D., Mcguigan, D., Nisbet, A. & Mckinnon, A. 2000. Accessibility: Review of measuring techniques and their application. Scottish Executive Central Research Unit.

Hall, C., McVittie, A. & Moran, D. 2004. What does the public want from agriculture and the countryside? A review of evidence and methods. *Journal of Rural Studies,* 20**,** 211-225.

Hammersley, M. 2008. Troubles with triangulation. *In:* BERGMAN, M. M. (ed.) *Advances in mixed methods research: Theories and application.* London: SAGE Publications Ltd.

Handy, S. 2005. Smart growth and the transportation-land use connection: What does the research tell us? *International Regional Science Review,* 28**,** 146-167.

Handy, S. L. & Niemeier, D. A. 1997. Measuring accessibility: An exploration of issues and alternatives. *Environment and Planning A,* 29**,** 1175-1194.

Harrison, C., Burgess, J., Millward, A. & Dave, G. 1995. English Nature Research Report Number 153: Accessible Natural Green Space in Towns and Cities. *A Review of Appropriate Size and Distance Criteria.* Peterborough: English Nature.

Hart, J. F. 1991. The perimetropolitan bow wave. *Geographical Review***,** 35-51.

Harvey, R. O. & Clark, W. A. 1965. The nature and economics of urban sprawl. *Land Economics,* 41**,** 1-9.

Haughton, G. & Hunter, C. 1994. *Sustainable cities*, Cromwell Press Ltda.

Herbert, D. T. & Thomas, C. J. 1997. *Cities in space: City as place*, David Fulton London.

Hidding, M. C. & Teunissen, A. T. J. 2002. Beyond fragmentation: New concepts for urban-rural development. *Landscape and Urban Planning,* 58**,** 297-308.

Hiedanpää, J. 2002. European-wide conservation versus local well-being: The reception of the Natura 2000 Reserve Network in Karvia, SW-Finland. *Landscape and Urban Planning,* 61**,** 113-123.

Hornis, W. & Ritsema Van Eck, J. 2008. A typology of peri-urban areas in the Netherlands. *Tijdschrift voor economische en sociale geografie,* 99**,** 619-628.

Hosseini, S. B., Maleki, S. N. & Azari, A. K. 2012. The Influences of Access Improvements in Pedestrian Street Use. *Procedia-Social and Behavioral Sciences,* 35**,** 645-651.

Howard, E. 1902. *Garden cities of to-morrow,* London, S. Sonnenschein & Co., Ltd.

Hull, A., Silva, C., Bertolini, L. & Te Brommelstroet, M. 2012. *Accessibility instruments for planning practice,* Brussels, EU COST Office.

Introduction to SAS [Online]. 2013. UCLA: Statistical Consulting Group. Available: http://www.ats.ucla.edu/stat/mult_pkg/whatstat/ [Accessed March 20, 2013].

Ipsos MORI. 2004. Landscapes in Britain. Survey for the National Trust.

Iskrić, G. 2006. *Četrtna skupnost Center Mestne občine Ljubljana* [Online]. Ljubljana. Available: http://www2.arnes.si/~supgiskr/cs/predstavitev.htm [Accessed May 2013].

Ittelson, W. H. 1978. Environmental perception and urban experience. *Environment and Behavior,* 10**,** 193-213.

IUCN (The International Union for Conservation of Nature and Natural Resources). Landscape planning: Papers presented at the International symposium of the relationship between engineering and biology in improving cultural landscape *In:* VANÍCEK, V., ed. "The Relationship between Engineering and Biology

in Improving Cultural Landscape", 1971 Brno, Czechoslovakia. Brno University of Agriculture.
Jaarsma, C. F., De Vries, J. R. & Beunen, R. 2009. Planning and managing rural recreational traffic flows; why the future can't be more like the past. *23rd Congress of the Association of European Schools of Planning*. Liverpool, UK.
Jabareen, Y. R. 2006. Sustainable Urban Forms Their Typologies, Models, and Concepts. *Journal of Planning Education and Research,* 26**,** 38-52.
Jacobs, J. 1961. *The death and life of great American cities*, Random House Digital, Inc.
Jenks, M., Burton, E. & Williams, K. 1996. *The compact city: a sustainable urban form?* London, Routledge.
Jim, C. & Chen, S. S. 2003. Comprehensive greenspace planning based on landscape ecology principles in compact Nanjing city, China. *Landscape and Urban Planning,* 65**,** 95-116.
Jorgensen, B. S. & Stedman, R. C. 2001. Sense of place as an attitude: Lakeshore owners attitudes toward their properties. *Journal of Environmental Psychology,* 21**,** 233-248.
Jorgensen, B. S. & Stedman, R. C. 2006. A comparative analysis of predictors of sense of place dimensions: Attachment to, dependence on, and identification with lakeshore properties. *Journal of Environmental Management,* 79**,** 316-327.
Kaplan, R. & Kaplan, S. 1989. *The experience of nature: A psychological perspective*, Cambridge University Press.
Knox, P. L. 1984. City profile: Edinburgh. *Cities,* 1**,** 328-334.
Korcelli, P. 2008. Review of Typologies of European Rural-Urban Regions. PLUREL report D2.1.1.
Kühn, M. 2003. Greenbelt and Green Heart: Separating and integrating landscapes in European city regions. *Landscape and Urban Planning,* 64**,** 19-27.
Lange, E. & Schaeffer, P. V. 2001. A comment on the market value of a room with a view. *Landscape and Urban Planning,* 55**,** 113-120.
Lennert, M., Van Hamme, G., Patris, C., Smętkowski, M., Płoszaj, A., Gorzelak, G., Kozak, M., Olechnicka, A., Wojnar, K. & Hryniewicz, J. 2010. FOCI Future Orientation for Cities: Final Report. European Union.
Lipský, Z. & Romportl, D. 2007. Classification and typology of cultural landscapes: Methods and applications. *The Role of Landscape Studies for Sustainable Development. University of Warsaw***,** 519-535.
Ljubljana – Slovenia [Online]. n.d.: Urbs Pandens. Available: http://www.pik-potsdam.de/urbs/ljubl.htm.
Loibl, W., Köstl, M. & Steinnocher, K. 2010. List of Generic Rural-Urban Region Types with the principle patterns regarding shapes, patterns and relations considering past dynamics: Classification of the major European rural-urban regions at NUTS3-aggregate level. *PLUREL report D2.1.2; D2.1.3.*
Lucas, K., Grosvenor, T. & Simpson, R. 2001. *Transport, the environment and social exclusion*, York Publishing Services Limited.
LUR (Ljubljanska urbana regija). 2007. Regionalni razvojni program Ljubljanske urbane regije 2007-2013. Ljubljana: RRA LUR.

Luttik, J. 2000. The value of trees, water and open space as reflected by house prices in the Netherlands. *Landscape and Urban Planning,* 48**,** 161-167.
Lynch, K. 1960. *The image of the city,* Cambridge, Mass., Technology Press.
Lynch, K. 1981. *A theory of good city form,* Cambridge, Mass, MIT Press.
Maat, K. & De Vries, P. 2006. The influence of the residential environment on green-space travel: Testing the compensation hypothesis. *Environment and Planning A,* 38**,** 2111.
Madanipour, A. 2004. *Public and private spaces of the city*, Routledge.
Marušič, J. 1992. *Raba odprtega prostora ljubljanskih občin: Raziskovalna naloga.* Univerza v Ljubljani.
Marušič, J. 2004. Krajinsko planiranje: Gradivo za priročnik. Ljubljana: Univerza v Ljubljani.
Marušič, J., Ogrin, D., Jančič, M., Bartol, B., Jug, M. & Maligoj, T. 1998. *Metodološke osnove: [uvodni zvezek],* Ljubljana, Ministrstvo za okolje in prostor RS, Urad RS za prostorsko planiranje.
Masum, F. 2009. Urban Fringe Management and Role of Good Governance: Integrating Stakeholders in Land Management Process. *7th FIG Regional Conference. Spatial Data Serving People: Land Governance and the Environment – Building the Capacity.* Hanoi, Vietnam.
McCracken, G. D. 1988. *The long interview,* Newbury Park, Calif.; London, Sage Publications.
McGinn, A. P., Evenson, K. R., Herring, A. H., Huston, S. L. & Rodriguez, D. A. 2007. Exploring associations between physical activity and perceived and objective measures of the built environment. *Journal of Urban Health,* 84**,** 162-184.
McGregor, D. F., Simon, D. & Thompson, D. A. 2006. *The peri-urban interface: Approaches to sustainable natural and human resource use,* London, Earthscan/James & James.
McHarg, I. L. 1971. *Design with nature,* New York, Garden City, N.Y., Published for the American Museum of Natural History; Doubleday/Natural History Press.
McKean, C. 1991. *Edinburgh: Portrait of a city,* London, Century.
McKirdy, C., Antrobus, S., Harvey, A., Hartop, S., Robertson, L., Slee, D. & Moore, T. 2008a. Edinburgh's Environment: State of the Environment Audit. Population and Housing. *In:* GAINEY, G. (ed.). Edinburgh: The City of Edinburgh Council.
McKirdy, C., Antrobus, S., Harvey, A., Hartop, S., Robertson, L., Slee, D. & Moore, T. 2008b. Edinburgh's Environment: State of the Environment Audit. Travel and Transport. *In:* GAINEY, G. (ed.). Edinburgh: The City of Edinburgh Council.
McKirdy, C., Antrobus, S., Harvey, A., Hartop, S., Robertson, L., Slee, D. & Moore, T. 2008c. Edinburgh's Environment: State of the Environment Audit. Summary conclusions and findings. *In:* GAINEY, G. (ed.). Edinburgh: The City of Edinburgh Council.
McKirdy, C., Antrobus, S., Harvey, A., Hartop, S., Robertson, L., Slee, D. & Moore, T. 2008d. Edinburgh's Environment: State of the Environment Audit. Spatial Development Patterns and Urban Structure. *In:* GAINEY, G. (ed.). Edinburgh: The City of Edinburgh Council.

McMillan, A. & Hyslop, E. 2008. The city of Edinburgh - Landscape and stone. *ICOMOS 2008 Scientific Symposium.* ICOMOS.
Meeus, S. J. & Gulinck, H. 2008. Semi-urban areas in landscape research: A review. *Living Reviews in Landscape Research,* 2**,** 1-45.
Misgav, A. 2000. Visual preference of the public for vegetation groups in Israel. *Landscape and Urban Planning,* 48**,** 143-159.
Molteno, S., Morris, J. & O'Brien, L. 2012. Public access to woodlands and forests: A rapid evidence review: A report by Forest Research on behalf of the Independent Panel on Forestry. The Research Agency of the Forestry Commission.
Morgan, D. L. 1997. *Focus groups as qualitative research,* Thousand Oaks, Calif.; London, Sage.
Municipality of Ljubljana (MOL). 2010. OPN MOL SD (Odlok o občinskem prostorskem načrtu Mestne občine Ljubljana – strateški del). Ljubljana.
Municipality of Ljubljana (MOL). 2013. *Javni promet v regiji* [Online]. Ljubljana: Mestna občina Ljubljana. Available: http://www.ljubljana.si/si/zivljenje-v-ljubljani/v-srediscu/67747/detail.html [Accessed April 4, 2013].
Municipality of Ljubljana (MOL). n.d. *Zgodovina Ljubljane* [Online]. Ljubljana: Občina Ljubljana. Available: http://www.ljubljana.si/si/ljubljana/zgodovina [Accessed 2011].
Næss, P. 2010. Residential location, travel, and energy use in the Hangzhou metropolitan area. *Journal of transport and land use,* 3.
Nasar, J. L. & Terzano, K. 2010. The desirability of views of city skylines after dark. *Journal of Environmental Psychology,* 30**,** 215-225.
Natural England. 2006. England Leisure Visits - Report of the 2005 Survey. Cheltenham: Natural England.
Natural England. 2007. Green Infrastructure and the Urban Fringe: Learning lessons from the Countryside In and Around Towns programme.
Natural England. 2009. Green Infrastructure Guidance. Natural England.
Natural England. 2010. Nature Nearby - Acessible Natural Greenspace Guidance.
Neuvonen, M., Sievänen, T., Tönnes, S. & Koskela, T. 2007. Access to green areas and the frequency of visits - A case study in Helsinki. *Urban Forestry & Urban Greening,* 6**,** 235-247.
Nielsen, T. S. & Hansen, K. B. 2007. Do green areas affect health? Results from a Danish survey on the use of green areas and health indicators. *Health & place,* 13**,** 839-850.
Nilsson, K. S. B., Pauleit, S., Bell, S., Aalbers, C. & Nielsen, T. A. S. 2013. *Peri-urban futures: Scenarios and models for land use change in Europe*, Springer Publishing Company.
OECD. 2010. OECD Regional Typology. Directorate for Public Governance and Territorial Development.
Omega Consult. 2009. Strokovne podlage urejanja javnega prometa v regiji: Končno poročilo. Ljubljana: Regionalna razvojna agencija Ljubljanske urbane regije.
Onix 2000. ProVal 2000 v1.1. v1.1 ed.: Dioptra Realis.
Online Oxford Dictionaries. 2013. Oxford Oxford University Press.
Palang, H., Helmfrid, S., Antrop, M. & Alumäe, H. 2005. Rural Landscapes: Past processes and future strategies. *Landscape and Urban Planning,* 70**,** 3-8.

Palang, H., Spek, T. & Stenseke, M. 2011. Digging in the past: New conceptual models in landscape history and their relevance in peri-urban landscapes. *Landscape and Urban Planning,* 100**,** 344-346.

Parlett, G., Fletcher, J. & Cooper, C. 1995. The impact of tourism on the old town of Edinburgh. *Tourism Management,* 16**,** 355-360.

Partridge, A. 2010. ESIMeC Baseline Study. *URBACT II.* European Union (European Regional Development Fund).

Pennington, M. 2002. *Liberating the Land: The Case for Private Land-use Planning,* London, The Institute of Economic Affairs.

Pergams, O. R. & Zaradic, P. A. 2006. Is love of nature in the US becoming love of electronic media? 16-year downtrend in national park visits explained by watching movies, playing video games, internet use, and oil prices. *Journal of Environmental Management,* 80**,** 387-393.

PeriUrban Parks [Online]. Available: http://www.periurbanparks.eu/live/index.php?a=open&id=4c99fc98837e2&ids=4c8ff07964a15&l=en [Accessed April 3, 2011].

Perpar, A. 2009. Analysis of regional spatial planning and decision-making strategies and their impact on land use in the urban fringe – case study KOPER. Ljubljana.

Phillips, D., Williams, K. & Al., E. 1999a. Literature review on peri-urban conceptualisation and management approaches. Final Technical Report for project R6949. Nottingham: School of Geography, University of Nottingham, UK.

Phillips, D., Williams, K., Andrews, G., Clarke, J., Carter, M., Kinsman, P., Smith, D., Willis, K., Bradbury, I. & Wu, K. 1999b. Literature review on peri-urban natural resource conceptualisation and management approaches. Initial draft. *Peri-urban Production Systems Research, Natural Resources Systems Programme, DFID-NRSP.* London: Nottingham and Liverpool Universities.

Pichler-Milanović, N. 2002. Urbs Pandens case study of the city of Ljubljana and urban region.

Pichler-Milanović, N. 2003a. The causes of urban sprawl: Ljubljana case study. Urbs Pandens Annual Report 2002.

Pichler-Milanović, N. 2003b. The consequences of urban sprawl: Ljubljana case study.

Pichler-Milanović, N. 2005. Urbs Pandens: Land use changes.

Pinho, P., Silva, C., Næss, P., Sousa, F., Reis, J. P., Giulietti, F. & Torres, M. 2010a. MOPUS: Mobility Patterns and Urban Structure. Faculty of Engineering of the University of Porto, Porto.

Pinho, P., Silva, C. & Reis, J. How urban structure constraints sustainable mobility choices: Comparison of Copenhagen and Oporto. Anais do 12th World Conference on Transport Research. Lisboa, Portugal, 2010b.

Piorr, A., Ravetz, J. & Tosics, I. 2011. Peri-urbanisation in Europe: Towards a European Policy to sustain Urban-Rural Futures. University of Copenhagen/ Academic Books Life Sciences.

Pryor, R. J. 1969. Delineating outer suburbs and the urban fringe. *Geografiska Annaler. Series B, Human Geography,* 51**,** 33-38.

PURPLE. 2013. Peri-Urban Open Space: How multi-functional land use can bring multiple benefits. *Topic Papers on Peri-Urban Issues.*

Qviström, M. 2008. A waste of time? On spatial planning and 'wastelands' at the city edge of Malmö (Sweden). *Urban Forestry & Urban Greening,* 7**,** 157-169.
Qviström, M. 2010. Shadows of planning: On landscape/planning history and inherited landscape ambiguities at the urban fringe. *Geografiska Annaler: Series B, Human Geography,* 92**,** 219-235.
Qviström, M. & Saltzman, K. 2006. Exploring landscape dynamics at the edge of the city: Spatial plans and everyday places at the inner urban fringe of Malmö, Sweden. *Landscape research,* 31**,** 21-41.
Qviström, M. & Saltzman, K. 2007. Ephemeral landscapes at the rural-urban fringe. *European Landscapes and Lifestyles. The Mediterranean and Beyond, Edições Universitárias Lusófonas, Lisboa, Portugal***,** 165-172.
Qviström, M. & Saltzman, K. 2008. Ambiguous edgelands: Landscape studies beyond rural-urban divides and disciplinary trench-lines. *Urban Forestry & Urban Greening,* 7**,** 143-144.
Rakodi, C. 1999. Poverty and well-being in the peri-urban interface of developing country cities: A review. Birmingham: International Development Department, University of Birmingham.
Rapoport, A. 1976. *The Mutual interaction of people and their built environment : a cross-cultural perspective,* The Hague, Chicago, Mouton.
Rapoport, A. 1977. *Human aspects of urban form: Towards a man-environment approach to urban form and design*, Pergamon Press Oxford.
Ravetz, J., Carter, J., Green, N., Rounsevell, M., Piorr, A. & Boitier, B. 2008. Scenario Framework – A guide for exploring the future of the peri-urban. *PLUREL Deliverable.* Centre for Urban & Regional Ecology, University of Manchester.
Ravetz, J., Fertner, C. & Nielsen, T. S. 2013. The Dynamics of Peri-Urbanization. *In:* NILSSON, K. S. B., PAULEIT, S., BELL, S., AALBERS, C. & NIELSEN, T. A. S. (eds.) *Peri-urban futures: Scenarios and models for land use change in Europe.* Springer Publishing Company.
Ravetz, J. & Warhurst, P. 2013. Manchester: Re-Inventing the Local–Global in the Peri-Urban City-Region. *In:* NILSSON, K. S. B., PAULEIT, S., BELL, S., AALBERS, C. & NIELSEN, T. A. S. (eds.) *Peri-urban futures: Scenarios and models for land use change in Europe.* Springer Publishing Company.
Relph, E. 1976. *Place and placelessness*, Pion London.
Rodger, R. 2001. *The transformation of Edinburgh: Land, property and trust in the nineteenth century*, Cambridge University Press.
Ryley, T. J. 2008. The propensity for motorists to walk for short trips: Evidence from West Edinburgh. *Transportation research part A: policy and practice,* 42**,** 620-628.
Scheurer, J. Discursive Modelling for Land Use-Transport Integration: An Explorative Case Study from Perth, Western Australia. ACSP-AESOP Joint Congress, Chicago (IL), USA, 2008. 6-11.
Schipperijn, J., Stigsdotter, U. K., Randrup, T. B. & Troelsen, J. 2010. Influences on the use of urban green space - A case study in Odense, Denmark. *Urban Forestry & Urban Greening,* 9**,** 25-32.
Schmithüsen, F. & Hirsch, F. 2010. Private forest ownership in Europe. Geneva: United Nations Economic Commission for Europe/Food and Agriculture Organization of the United Nations.

Schrijnen, P. M. 2000. Infrastructure networks and red-green patterns in city regions. *Landscape and Urban Planning,* 48**,** 191-204.

Schroeder, H. W. 1988. Environment, behavior, and design research on urban forests. *In:* ZUBE, E. H. & MOORE, G. T. (eds.) *Advances in environment, behavior, and design, vol. 2.* New York: Plenum Press.

Scott, A., Carter, C., Reed, M., Larkham, P., Adams, D., Morton, N., Waters, R., Collier, D., Crean, C., Curzon, R., Forster, R., Gibbs, P., Grayson, N., Hardman, M., Hearle, A., Jarvis, D., Kennet, M., Leach, K., Middleton, M., Schiessel, N., Stonyer, B. & Coles, R. 2013. Disintegrated development at the rural-urban fringe: Re-connecting spatial planning theory and practice. *Progress in Planning,* 83**,** 1-52.

Scott, M. M., Evenson, K. R., Cohen, D. A. & Cox, C. E. 2007. Comparing perceived and objectively measured access to recreational facilities as predictors of physical activity in adolescent girls. *Journal of Urban Health,* 84**,** 346-359.

Scottish Executive. 2003. Land Reform (Scotland) Act 2003. *Office of Public Sector Information.*

Semken, S., Freeman, C. B., Watts, N. B., Neakrase, J. J., Dial, R. E. & Baker, D. R. 2009. Factors that influence sense of place as a learning outcome and assessment measure of place-based geoscience teaching. *Electronic Journal of Science Education,* 13.

Semm, K. & Palang, H. 2010. Landscape Accessibility: Spaces for Accessibility or Spaces for Communication? *Living Reviews in Landscape Research,* 4.

SESplan: Strategic Development Plan. 2013. The City of Edinburgh Council, East Lothian Council, Fife Council, Midlothian Council, Scottish Borders Council and West Lothian Council.

Sharp, J. L., Mobley, C., Hammond, C., Withington, C., Drew, S., Stringfield, S. & Stipanovic, N. 2012. A mixed methods sampling methodology for a multisite case study. *Journal of Mixed Methods Research,* 6**,** 34-54.

Shaw, A. 2005. Peri-urban Interface of Indian cities: Growth, governance and local initiatives. *Economic and Political Weekly***,** 129-136.

Shoard, M. 2000. Edgelands of promise. *Landscapes,* 1**,** 74-93.

Shoard, M. 2002. Edgelands. *In:* JENKINS, J. (ed.) *Remaking the Landscape: The Changing Face of Britain.* London: Profile Books.

Silva, C. D. C. F. 2008. *Comparative Accessibility for Mobility Management: The Structural Accessibility Layer.* Doctor in Civil Engineering, Universidade do Porto.

Simon, D. 2008. Urban environments: Issues on the peri-urban fringe. *Annual Review of Environment and Resources,* 33**,** 167-185.

Simon, D., McGregor, D. & Thompson, D. 2006. Contemporary perspectives on the peri-urban zones of cities in developing areas in. *In:* MCGREGOR, D. F., SIMON, D. & THOMPSON, D. A. (eds.) *The peri-urban interface: Approaches to sustainable natural and human resource use.* Earthscan, London.

Simoneti, M. 1992. *Urejanje mestnega prostora: Javne zelene površine.*

Sixsmith, J. 1986. The meaning of home: An exploratory study of environmental experience. *Journal of Environmental Psychology,* 6**,** 281-298.

Slovenija 1993. Zakon o gozdovih (Act on Forests). Ljubljana, Slovenia: Uradni list Republike Slovenije.
Slovenija 1996. Zakon o kmetijskih zemljiščih (Agricultural Land Act). Ljubljana, Slovenia: Uradni list Republike Slovenije.
Slovenija 2007a. Zakon o planinskih poteh (ZPlanP) (Mountain Paths Act). Ljubljana, Slovenia: Uradni list Republike Slovenije.
Slovenija 2007b. Zakon o spremembah in dopolnitvah Zakona o gozdovih (ZG-B). Ljubljana, Slovenija: Uradni list Republike Slovenije.
Smith, D. & Halden, D. 2005. Identifying through accessibility planning how sustainable growth can be achieved in the compact city: A case study of Edinburgh. *PROCEEDINGS OF ETC 2005, STRASBOURG, FRANCE 18-20 SEPTEMBER 2005-TRANSPORT POLICY AND OPERATIONS-PLANNING FOR SUSTAINABLE LAND USE AND TRANSPORT-STREETS FOR THE 21ST CENTURY.* Strasbourg.
Smith, P. J. 1994. Slum clearance as an instrument of sanitary reform: The flawed vision of Edinburgh's first slum clearance scheme. *Planning Perspectives,* 9**,** 1-27.
SNH (Scottish Natural Heritage). 2005. Scottish Outdoor Access Code: Know the Code Before You Go. Scottish Natural Heritage.
Soini, K., Vaarala, H. & Pouta, E. 2012. Residents' sense of place and landscape perceptions at the rural-urban interface. *Landscape and Urban Planning,* 104**,** 124-134.
Sotoudehnia, F. & Comber, L. 2011. Measuring Perceived Accessibility to Urban Green Space: An Integration of GIS and Participatory Map. *The 14th AGILE International Conference on Geographic Information Science.* Utrecht, The Netherlands.
Spiekermann, K. & Neubauer, J. 2002. European accessibility and peripherality: Concepts, models and indicators. *Nordregio Working Paper.*
Stedman, R. C. 2003. Is it really just a social construction? The contribution of the physical environment to sense of place. *Society & Natural Resources,* 16**,** 671-685.
Steg, L. & Gifford, R. 2005. Sustainable transportation and quality of life. *Journal of Transport Geography,* 13**,** 59-69.
Steiner, F. 1991. *The living landscape: An ecological approach to landscape planning*, McGraw-Hill, Inc.
Steinitz, C. 1990. A framework for theory applicable to the education of landscape architects (and other environmental design professionals). *Landscape journal,* 9**,** 136-143.
Strauss, A. & Corbin, J. 1998. *Basics of qualitative research: Techniques and procedures for developing grounded theory,* Thousand Oaks, California, Sage Publications, Inc.
Strle, B. 2012. Zakon o vodah: Neuradno prečiščeno besedilo (ZV-1-NPB2) (Waters Act). Ljubljana, Slovenia: Državni zbor RS.
Stubbs, P. 2012. *History of Edinburgh* [Online]. www.edinphoto.org.uk. Available: http://www.edinphoto.org.uk/1_edin/1_edinburgh_history.htm [Accessed December 2013].
SURF (Sustainable Urban Fringes). 2012. Connecting Urban and Rural: Final report of the Sustainable Urban Fringes (SURF) Project. *In:* WATT, E., LESLIE,

A., OLDEJANS, R., THOMAS, K., LITTLEWOOD, S., WISHARDT, M., DE BRUIJN, T., DE VRIES, B., HACCOU, H. & LIER, G. (eds.).
SURF Project – Aberdeen: Reflection Report. 2012. Aberdeen.
Šušteršič, J., Rojec, M. & Korenika, K. 2005. Strategija razvoja Slovenije. Ljubljana: Urad Republike Slovenije za makroekonomske analize in razvoj.
Swaffield, S. & Primdahl, J. 2006. Spatial concepts in landscape analysis and policy: Some implications of globalisation. *Landscape ecology,* 21**,** 315-331.
Swaffield, S. R. 2002. *Theory in landscape architecture: A reader*, University of Pennsylvania Press.
Swanwick, C. 2002. Landscape character assessment: Guidance for England and Scotland. *The Countryside Agency and Scottish Natural Heritage*.
Swanwick, C. 2009. Society's attitudes to and preferences for land and landscape. *Land Use Policy,* 26**,** S62-S75.
Tacoli, C. 1998. Rural-urban interactions: A guide to the literature. *Environment and Urbanization,* 10**,** 147-166.
Taylor, J., Barnard, M., Neil, H. & Creegan, C. 2009. The travel choices and needs of low income households: The role of the car. The National Centre for Social Research.
Thayer, R. 2002. Three dimensions of meaning. *In:* SWAFFIELD, S. (ed.) *Theory in Landscape Architecture: A Reader.* Philadelphia: Penn University of Pennsylvania Press.
The City of Edinburgh Council (CEC). 2006. Rural West Edinburgh Local Plan. Edinburgh: The City of Edinburgh Council.
The City of Edinburgh Council (CEC). 2007. Local Transport Strategy 2007-2012. Edinburgh: The City of Edinburgh Council.
The City of Edinburgh Council (CEC). 2010. Open space strategy. City Development Department, Planning. Edinburgh: The City of Edinburgh Council.
The City of Edinburgh Council (CEC). 2011a. Edinburgh Local Development Plan: Environmental report. Edinburgh.
The City of Edinburgh Council (CEC). 2011b. Edinburgh Local Development Plan: Main Issues Report. Edinburgh: The City of Edinburgh Council.
The City of Edinburgh Council (CEC). 2011c. *RWELP Interactive Map* [Online]. Edinburgh. Available: http://217.174.251.127/planning/rwelp.htm [Accessed June 2013].
The City of Edinburgh Council (CEC). 2012. Edinburgh by Numbers 2012/13. Edinburgh: The City of Edinburgh Council.
The City of Edinburgh Council (CEC). 2013a. Edinburgh Local Development Plan. Edinburgh: The City of Edinburgh Council.
The City of Edinburgh Council (CEC). 2013b. Edinburgh Local Development Plan: Transport Appraisal. Edinburgh: The City of Edinburgh Council.
The City of Edinburgh Council (CEC). 2008. Core paths plan. Edinburgh: The City of Edinburgh Council.
The Scottish Government. 2013. *Scottish Neighbourhood Statistics (SNS)* [Online]. The Scottish Government. Available: http://www.sns.gov.uk/ [Accessed May 2013.
Thomson, J. M. 1978. *Great cities and their traffic,* Harmondsworth, Penguin.

Tjallingii, S. P. 2000. Ecology on the edge: Landscape and ecology between town and country. *Landscape and Urban Planning,* 48**,** 103-119.
Transport Scotland. 2013. Transport Series: National Travel Survey 2009/2010: Scotland Results. *Statistical Bulletin.* 01.01.2013 ed.: Transport Scotland.
Tuan, Y.-F. 1977. *Space and place: The perspective of experience,* London, Edward Arnold.
Turok, I. & Bailey, N. 2002. A Development Strategy for Central Scotland? *Scottish Affairs***,** 71-95.
Tyrväinen, L., Mäkinen, K. & Schipperijn, J. 2007. Tools for mapping social values of urban woodlands and other green areas. *Landscape and Urban Planning,* 79**,** 5-19.
UIRS. 2001. Zeleni sistem mesta: Elaborat 04. Ljubljana: UIRS (Urbanistični inštitut Republike Slovenije)
Uuemaa, E., Antrop, M., Roosaare, J., Marja, R. & Mander, Ü. 2009. Landscape metrics and indices: An overview of their use in landscape research. *Living Reviews in Landscape Research* [Online], 3. Available: http://landscaperesearch.livingreviews.org/Articles/lrlr-2008-3/.
Van Herzele, A., De Clercq, E. M. & Wiedemann, T. 2005. Strategic planning for new woodlands in the urban periphery: Through the lens of social inclusiveness. *Urban Forestry & Urban Greening,* 3**,** 177-188.
Van Herzele, A. & Wiedemann, T. 2003. A monitoring tool for the provision of accessible and attractive urban green spaces. *Landscape and Urban Planning,* 63**,** 109-126.
Van Zoest, J. How to Marry Nature with Planning And Design? *In:* TEKLENBURG, J., VAN ANDEL, J. & SMEETS, J., eds. IAPS (International association for people-environment studies), 17.1.2003 1998. IAPS.
Ward Thompson, C. 2002. Urban open space in the 21st century. *Landscape and Urban Planning,* 60**,** 59-72.
Ward Thompson, C., Aspinall, P., Bell, S. & Findlay, C. 2005. "It Gets You Away From Everyday Life": Local Woodlands and Community Use - What Makes a Difference? *Landscape research,* 30**,** 109-146.
WCED (World Commission on Environment Development). 1987. Our common future. *In:* BRUNDTLAND, G. H. (ed.). Oxford University Press Oxford.
Wehrwein, G. S. 1942. The rural-urban fringe. *Economic Geography***,** 217-228.
Wheeler, S. 2003. Planning Sustainable and Livable Cities. *In:* LEGATES, R. T. & STOUT, F. (eds.) *The city reader.* 3rd ed. New York: Routledge.
White, P. R. 1995. *Public transport: Its planning, management and operation,* London, UCL Press.
Whyte Jr, W. H. 1958. *The exploding metropolis,* Garden City, N.Y., Doubleday.
WJ Cairns and Associates. 2006. Edinburgh public parks and gardens strategy. Edinburgh.
Yin, R. K. 2009. *Case study research: Design and methods,* Thousand Oaks, California, SAGE Publications, Inc.
Zasada, I., Loibl, W., Berges, R., Steinnocher, K., Köstl, M., Piorr, A. & Werner, A. 2013. Rural–Urban Regions: A Spatial Approach to Define Urban–Rural Relationships in Europe. *In:* NILSSON, K. S. B., PAULEIT, S., BELL, S., AALBERS, C. & NIELSEN, T. A. S. (eds.) *Peri-urban futures: Scenarios and models for land use change in Europe.* Springer Publishing Company.